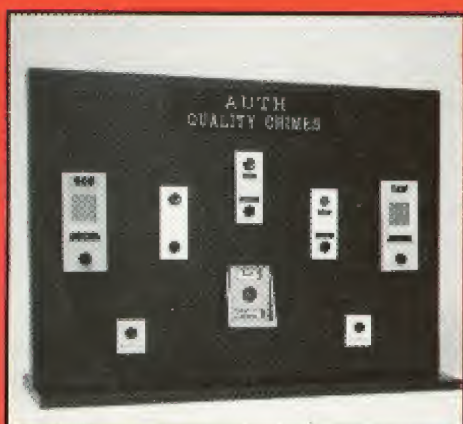


The National Locksmith[®]

October 1991



Manufacturer Profiles Issue

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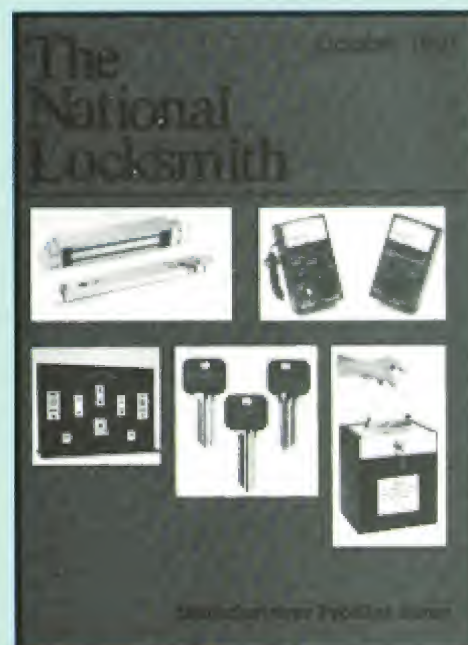
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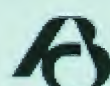
The following manufacturers are featured on our cover this month: (in alphabetical order) Auth Chimes; Bonafide Factory Products; Briggs & Stratton; Kustom Key; and Security Door Controls. For more information about these and other manufacturers, please refer to our Manufacturer Profiles section beginning on page 32.

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you wish to read**

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Commentary

Locksmiths Lose A Friend

Jerry Connelly, owner of Philadelphia Lock & Safe, passed away on August 21, 1991. I really hate having to report that news because Jerry was a good man and a good friend of locksmithing.

Many, many times over the past ten years Jerry's voice would come booming at me over the phone lines from his office on Bainbridge Street in the old part of Philadelphia. He always started off with a joke and demanded one in return.

When the pleasantries were complete, he'd say, "Now listen..." and the purpose of his call would be revealed. Often he called to disagree with me on one topic or another. We have argued for hours on topics such as locksmith legislation and the like. He was so darned persuasive that I often found myself unable to remember my own arguments until after we hung up.

Jerry Connelly received just about every award known to this industry. He was presented with the Philadelphia Award...twice. He received The National Locksmith Award from this magazine, ALOA's President's Award, as well as dozens of others. Jerry was well acquainted with all the important people in our industry.

But, interestingly, it was not the well known people he concerned himself with. Jerry Connelly was more interested in the little guy, the small locksmith trying to better himself and his industry at the same time. He was tireless and relentless in his efforts to professionalize the locksmith.

Jerry Connelly was a high-profile kind of guy. He regularly traveled to England and other countries where he was as well known among locksmiths there as in this country. For many years he attended almost every locksmith convention in North America, often serving as keynote speaker.

However, I repeat, that he was the kind of guy who lived to help improve the lives of other locksmiths. I remember just starting out in the industry in my early twenties. Someone told me that Jerry Connelly knew everyone and would be a good guy to spend a few minutes with. I called for an appointment which was easy enough since I, too, lived in the Philly area.

Instead of the fifteen or so minutes I expected, this man spent an entire afternoon telling me all about locksmithing and the important issues of our day. Then he bought me lunch at one of his favorite restaurants...the famous Melrose Diner. Jerry didn't spend his time with me because I could help him in any way. He gave me his time because I was interested in the love of his life...locksmithing.

On August 21, 1991 locksmiths lost a good friend. I recall that Jerry ended every phone conversation with the same words. "God Bless." You too, Jerry, you too.

In the center of this issue you will find our sixth annual Door Hardware Institute convention supplement. This year's show is to be held from October 18th to 20th in Denver, CO.

The DHI show is an event which allows you to see a tremendous array of products related to doors, locks, security and hardware all under one roof. I urge you to consider making plans to attend this excellent convention. In our supplement, you will get a good feel for many of the products to be exhibited this year in Denver.

Hope to see you there!



Marc Goldberg
Editor/Publisher

October 5

Letters

Comments, Suggestions and Criticisms

The National Locksmith is interested in your view. We do reserve the right to edit for clarity and length. Please address your comments, praise, or criticism to Editor, The National Locksmith, 1533 Burgundy Parkway, Streamwood, IL 60107. All letters to the editor must be signed.

In Memoriam of David G. Lee

Dear Marc:

I would like to personally take this opportunity to inform everyone in the lock and security business of the passing of one of our industry's brilliant minds, David G. Lee, owner and president of Lee Industries. His genius helped him to create, design and engineer his own locksmith specialty tools for which he founded his own company. His knowledge and expertise earned him respect in the security field. He was referred to by many as a "Grandmaster Locksmith". His most recent achievement was receiving a patent for helping in the design of the Fort Lock Corporation's new high security APEX tubular key lock. He will be missed and always be remembered by those who knew him.

Lee Industries will continue under the direction of David's wife and son, Jennie and Brian Lee. We will continue to manufacture and sell the complete line of high quality picks, pullers, manipulation tools, and drill rigs. Please bear with me through this transition and I appreciate your patience and understanding during these rather difficult and trying times.

Brian Lee
California

Reader Clarifies Editor's Note

Dear Marc:

My letter concerns the Editor's Note on p. 16 of the August, 1991 issue of *The National Locksmith*. I say that Papaiz locks can, in fact, be serviced and a pin kit is available. I have used the pin kit, top pin loader, top pin retainer clip and depth keys to rekey when necessary. You are correct in that the locks are fairly inexpensive and in most cases it is easier and cheaper to replace the cylinders. Just thought you might want to know.

Ann McCrady
Virginia

Association Demonstrates Desire To Protect Industry

Dear Marc:

Some very prominent people in the industry have come forth with letters supporting Ilco's right of expanding markets and free trade. They say that we should be more professional and not worry about hardware stores taking away installations, rekeying, origination and duplication of keys.

These are the same people who tell us not to worry about police and tow truck operators taking away our lock-out business. Their argument centers around the idea that we should be doing more high security locks, access control and safe work. I welcome and try to promote more of that type work, but that does not sustain my business. The "bread and butter" work is still very important, even to those of us who do the more sophisticated work.

They have totally missed the point! which is...if you passively give up pieces of your business, you will eventually have no business left. Give up selling deadbolts and key-in-knob locksets, installations, rekeying and key duplication to hardware stores, and you have lost one piece. Give up auto lock-outs to tow truck operators and police, and you have lost another piece.

Give up electric strikes and access control to electricians and alarm companies and you've lost some more. Give up safe deposit and bank vault work to the manufacturers and you've lost again. Give up interchangeable core to the manufacturers, and there's another chunk gone. Give up auto lock work to mechanics and car dealerships; another piece gone.

How much are you willing to give up?

Richard Hess, CPL
South Jersey Locksmiths
Association

Reader Fears 'Professional Extinction'

Dear Marc:

I read your editorial of August, 1991 and am very disturbed and upset, to put it mildly.

I feel if we, who earn a living in the profession of locksmithing, allow this to continue without objection we can kiss our profession, as we know it, goodbye.

First key cutting, then lock sales, now rekeying, lock picking etc., what next? Lock installations? High security locks? Safe sales and servicing? Who knows.

Milton Sloane
Arizona

Editor's Note: I have received letters and phone calls on this topic which now number well over 150. It seems that a very large majority of locksmiths have been upset by this situation.

In the October issue of ALOA's Keynotes magazine, Ilco has been offered the chance to submit an article detailing their point of view. I have also submitted an article. ALOA members will then have the opportunity to vote as to how they feel. In the end, I hope that Ilco will make some major changes.

Enter the 1991 Technitips Contest

\$\$\$ Thousands and thousands in cash and prizes! \$\$\$

First Prize



Silca's Club Jr.

This easy to operate key duplicating machine makes the popular Laser-Sidewinder auto keys. It also duplicates various automotive and commercial high security keys.

Second Prize



HPC's One Machine

The One Machine is a semi-automatic, durable and accurate duplicating machine designed to cut several hundred keys per day, effortlessly. It cuts standard cylinder keys, plus most foreign automotive keys.

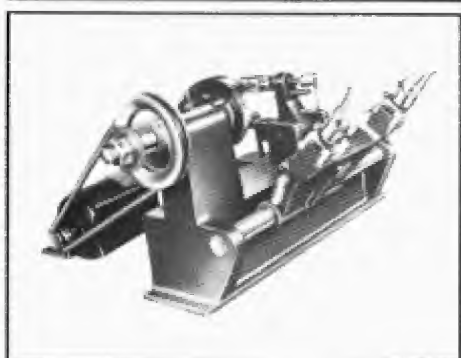
Third Prize



ESP 660

The model 660 key machine can be used for manual cutting or, with the flip of a switch, it will cut keys automatically. It is designed to accommodate large head keys such as hotel and foreign auto blanks.

Fourth Prize



Belsaw 200

Duplicate, cut by code, cut flat steel keys. Complete machine with motor, three cutters, guides, and instructions. Built-in micrometer.

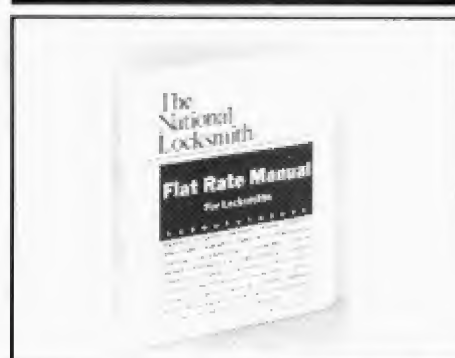
Fifth Prize



HPC 9120

HPC's newest and most compact key cutting machine features reversible jaws. Double-sided copy dog cuts flat steel and safety deposit keys and has softy brush. Excellent versatile machine.

Sixth Prize



\$100 Cash & Flat Rate Manual

\$100.00 in cash will brighten your day! So will the *Flat Rate Manual for Locksmiths*. The manual will help you price your services for profit. You won't ever have to guess how to price again.

Code Books From The National Locksmith

Seventh Prize



General Code Book Set (NGCB)

These three books contain 450,000 codes covering domestic lock and automobile codes.

Eighth Prize



Padlock Code Book Set (NPCB)

These three volumes offer 462,000 covering Dudley, American (Junkunc), Master and Yale.

Ninth Prize



Foreign Code Book Set (NFCB)

This two volume set holds 432,000 codes for the complete variety of foreign codes, from Alpha Romeo to Yugo.

Technitips

Helpful Hints from Fellow Locksmiths



Send me your Technitips. Who knows, you may be our next winner! c/o The National Locksmith, 1533 Burgundy Parkway, Streamwood, IL 60107.

by Robert Sieveking

Congratulations to all those who find their Technitips printed this month. The ideas you have shared and the tricks you have taken the time to describe are greatly appreciated by your fellow locksmiths. Your locksmith bucks are on their way and your names have been added to the growing list of contributors that will be considered for the year end prizes.

Speaking of the year end, only two months remain in the '91 prize contest. The list, which has been steadily updated with each month's winners, only has a few lines that remain to be filled. Will your name grace the page of The National Locksmith magazine, or have you decided to let it slip again? Are you waiting for just the right

moment, to submit that dynamite solution to a long standing locksmith problem, or are you sending it today?

Locksmith bucks make locksmith books extremely easy to buy. Opportunity knocks, sometimes we miss the call and sometimes we hear the call and miss the chance, but I've never heard of opportunity knocking down the

door. Write up a nice explanation of your Technitip, make a good drawing or maybe a photo, and send it soon. Entries must be submitted exclusively to The National Locksmith magazine. November and December will reveal the final entries for the '91 Technitips contest. Your name could easily be found among the winners!

Win a VATS Decoder From All-Lock!

Each month, All-Lock will award one of their A-7000 VATS Decoders and an A-7001 Adaptor to the best automotive Technitip submitted this month. If you would like a chance to win a free decoder and adaptor from All-Lock, simply submit your automotive tip exclusively to *The National Locksmith*. Tips submitted to other publications cannot be considered.

All-Lock's A-7000 makes it easy to diagnose system failures, service the column and select the correct key blank. This sophisticated tool is easy to use and is completely portable. Long wire leads are easy to use in cramped automotive situations.

Submit your tip, and win today!



How To Enter

All you need to do to enter is submit a tip, covering any aspect of locksmithing to *The National Locksmith*. Certainly, you have a favorite way of doing things that you'd like to share with other locksmiths. Why not write it down and submit it to: Robert Sieveking, 'Technitips' Editor, *The National Locksmith*, 1533 Burgundy Parkway, Streamwood, IL 60107.

Tips submitted to other industry publications will **not** be eligible! So get busy and send in your tips today. You may win cash merchandise, or even one of many key machines or code book sets! At the end of the year, we choose the winners of the listed prizes.

Last year dozens of people walked off with money and prizes. Wouldn't you like to be one of the prize winners for 1991? Enter today! It's a lot easier than you think!

Every Tip Wins 'Locksmith Bucks!'

Yes, every tip published wins a prize. But remember, you must submit your tip to *The National Locksmith* exclusively. Each and every tip published in Technitips wins you \$25.00 in Locksmith Bucks! Use this spendable cash toward the purchase of any books or merchandise from *The National Locksmith*. You also receive a Bonded Locksmith bumper sticker and decal. Plus you are now eligible for the really big prizes!

Best Tip of the month prizes!

If your tip is chosen as the best tip of the month, you will win \$50.00 in cash as well as \$35.00 in Locksmith Bucks! Plus you will receive a quartz Locksmith watch, a Bonded Locksmith bumper sticker, decal and a Locksmith Cap. Plus, you may win one of the annual prizes.

The Technitips Challenge

This month's big challenge is for your best method of removing roll pins and solid drive pins. One of the biggest problems for the locksmith called to service foreign automotive locks, is to remove the roll pins and drive pins that hold the cylinder in the housing, without destroying the housing.

Some padlocks have solid drive pins, which act as permanent fasteners for the lock cylinder or case cover. Many safe heads use either solid or hollow drive pins to retain the bolts in the bolt bar or the relocking lever in the door. When you need to remove a pin from a blind hole, how do you handle the job?

Write up your answer to the Technitip Challenge and send it to: Technitips, The National Locksmith, 1533 Burgundy Parkway, Streamwood, IL 60107. You'll qualify for all the great prizes!

October's Best Tip

There are a few manufacturers who are marketing a self-rekeyable cylinder for residential and commercial use. Some of these are U-Change, Harloc, etc. By simply inserting some sort of special key or tool, these cylinders can be rekeyed without removal.

This Technitip can be used on standard cylinders in the shop. The method takes about five minutes, and can be used on newly installed cylinders which you are sure will be rekeyed in the near future. No special tools or equipment are needed.

Remove the plug from a standard stocked mortise cylinder. (I suggest this for your first try.) Simply master key the last pinned chamber. For example: 1" stacked mortise cylinder with AR1 keyway, supplied coded keys - 03687. Cut a second key coded - 03685.

Master key the last pinned chamber accordingly:

Original Key - 03687

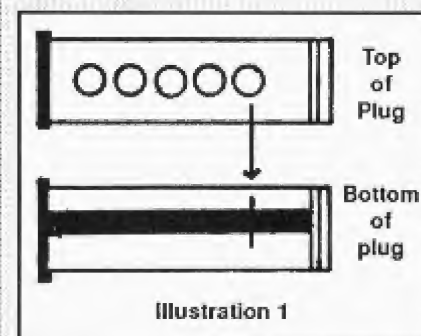
Second Key - 03685

Bottom Key - 5(.250)

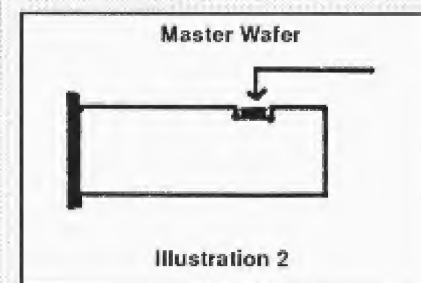
Top (master pin) - 2.(030)

Remove all the bottom pins from the plug and set them aside. Turn the

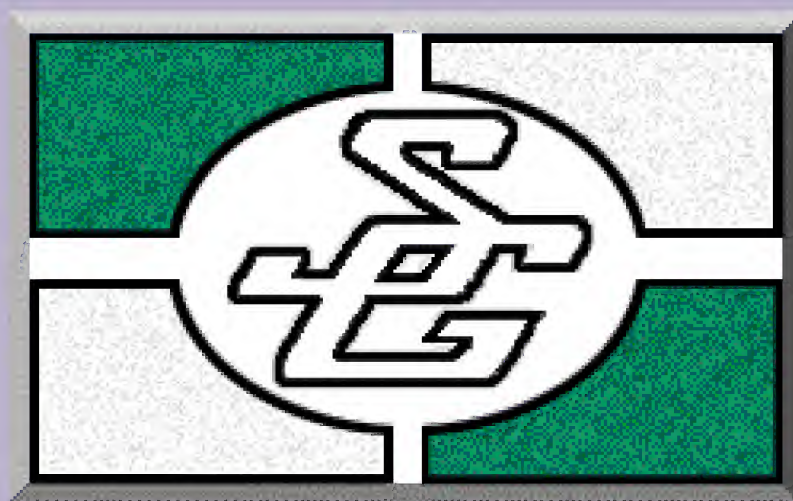
plug upside down and mark the center of the masterkeyed chamber on the bottom of the plug. (See illustration 1.)



You will file or drill away enough material at the bottom of the plug at this point so the master wafer will be able to sit perfectly flush with the circumference of the plug. In this



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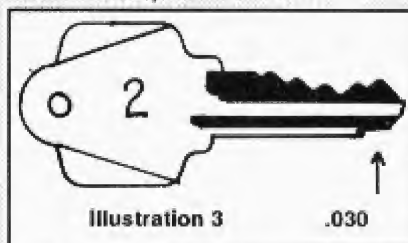
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instance, .003". (See illustration 2.)

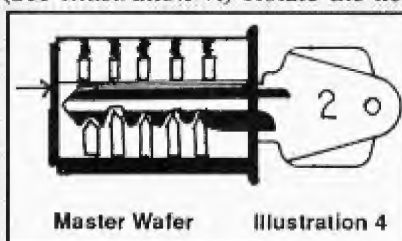
Take the newly cut key (second key) and at the bottom of the blade file away enough material at the masterkeyed space so the master wafer will sit in flush with the bottom of the key. In this instance, .030. Mark this key #2. (See illustration 3.)



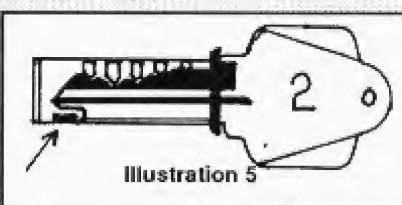
Reload the cylinder normally, with the master wafer above the pin in the last position. When the original keys are used, (give these to the customer) the cylinder will work normally. Here you simply have a cylinder with one mastered chamber. However, it is now set up to be rekeyed without removing it from the lock.

When the lock needs to be rekeyed, use the second key (the one with the notch). Insert all the way into the lock. Turn it slowly to the 180 degree position and pause. The

master wafer placed in the fifth chamber (in the shell) will fall down into the notch cut into the plug and key. You may here a slight click. (See illustration 4.) Rotate the key

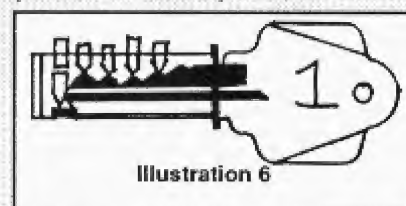


completely around and pull out. The cylinder is now rekeyed. (See illustration 5.)



The master wafer will be trapped in the notch, cut into the bottom of the plug (as long as you were careful locating the position of the notch). This cylinder is now rekeyed to the 5 cut on the second key at the fifth chamber. (Only the .250 pin remains.)

Give the customer the second key (The one with the notch.) The first key no longer operates the cylinder because the master wafer blocks complete entry of the original key. (See illustration 6.)



Note: If the plug gets jammed slightly at the 180 degree position because of inaccurate cuts, turn the plug back and forth a few times to bevel the side of the wafer which passes under the driver as the plug is rotates. (Or you can do this beforehand.)

I have used this method many times with 100 percent success. I do not charge the customer extra, because I know that when called to rekey the cylinder, all I have to do is insert the second key and turn for a service call fee. If you feel the need to share this little secret with your customer, by all means do so. Leave

Continued on page 14



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Continued from page 12

them a second key but be sure to charge extra.

You can also set up a cylinder to be rekeyed more than once by masterkeying the last two chambers etc. but be sure to mark each key carefully as the third key will have to be notched back further.

Joseph Rathjen
New York

Automotive Tip of the Month

This tip is the winner of the All-Lock A-7000 VATS Decoder and the A7001 Adapter. All-Lock will award this package to the best automotive tip each month of the year.

Whenever I go out to open a locked car, I go with the attitude that someone else has worked on it before me, and has probably disconnected either the handle linkage or the cylinder linkage. When I get to the car, I am usually not disappointed. This Technitip is an easy method of quickly opening autos with disconnected linkage.

The horizontal linkages inside the door, next to the inside panel, are usually not disconnected, even after a policeman or tow truck driver has thrust blindly in the door to unlock it. If you ever accidentally disconnect the linkage or follow in someone's wake who has, here is all you do:

Use a standard hook tool on the horizontal linkage to unlock the slide button (vertical button). Now use that same tool, but this time hook it on the inside handle linkage rod. Watch for movement of the inside handle, and when you have bound it with the tool, push forward to activate the inside handle and pull the door open with the inoperative outside handle. More force is needed to do this than to unlock the slide lock. It really works slick.

Explain to the customer that because of the disconnections, he or she will have to leave the window down until they get the inside linkage reconnected. Then explain the cost of the door repair. This is the real money maker.

I have used this tip on Ford, GM, Chrysler cars and on many foreign cars as well. The handle linkage on cars is usually just above or below the horizontal linkage rod. Remember, you are going for the inside handle and

button linkages, not the exterior.

On some Ford cars, you can go right for the handle linkage if you cannot get the button up or the slide over. You can use the same technique just described. With most Ford cars and trucks, when one moves the inside handle, the lock button clears and the door will open and unlock automatically.

George Zagone
Illinois

Since Geo introduced their line of cars through GM little technical data has been available other than how to cut the keys, and the manufacturer has always said that all locks had to be replaced if a malfunction occurred. This is not true for the Metro locks.

The ignition lock and switch assembly is held on as most foreign car locks are, with shear-head metric bolts. After you have removed the switch case assembly these pins can be removed with a .050 round key extractor. After removal of the roll pins, the lock cylinder assembly will slide out of the switch assembly. Note: do not lose the washer and springs which are directly behind the lock cylinder assembly.

Continued on page 16

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Continued from page 14

After removal you will find a C Clip which holds the cylinder assembly. This can be removed with a set of snap ring pliers.

After removal of the C Clip, the cylinder will need to be picked on both sides due to the wafer composition within the lock cylinder, (four up and four down) Or in the case of the cylinder I serviced which had the key broken off in the center of the third cut the cylinder will slide out. If no key is available, the code can be found on the right side door lock which requires door panel removal.

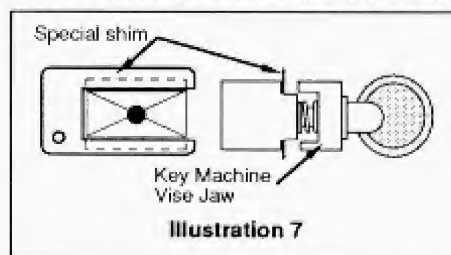
Inside the door, you will find a plastic pawl which holds the lock rod linkage. Remove the plastic pawl to find a U-shaped clip which secures the cylinder. Remove the clip and push the cylinder to the inside of the door. This will give you the code to cut the key so you can service the ignition cylinder.

After servicing of the ignition lock, reverse the procedure and install the cylinder back in the switch case without the key, making sure to throw boltworks correctly and the roll pins are in the cylinder. You can test this by inserting the key, working the lock and taking the key out. The bolt should throw

automatically.

Willie R. Bowen
Virginia

This Technitip is for those who have trouble cutting Best and Falcon type keys. Large grooves on Best-Falcon keys sometimes cause the clamp to turn, flipping the bank out of the key vise, when cutting the key. A metal shim, like the one shown in illustration seven,

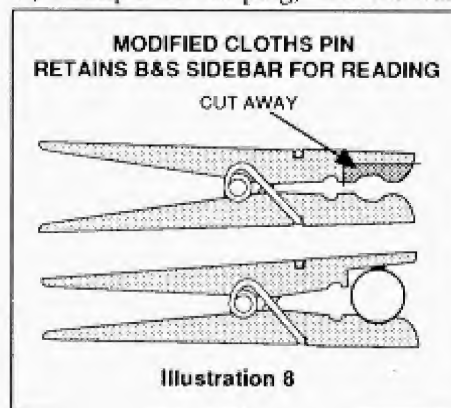


greatly increases holding capacity of the key machine vise jaws. It is unique because it draws its stability from being clamped on "both" sides of the key machine vise jaw eliminating the possibility of tipping. You may sometimes need two shims. Place the key above or below the shim depending on the key being cut.

William Cortright
Pennsylvania

Here is a tool I made and have used for years. It has enough spring pressure to hold the sidebar of a GM plug so it can be picked and then read, thus saving on the fingers.

Cut part of the wood from a spring clothespin so it is flat. The other rounded side can be enlarged to fit the plug better if desired. (See illustration 8.) Clamp it to the plug, with the flat



side against the side bar to pick and read the cylinder. Just that simple. You can also use it as a handle to hold the plug.

R.E. Schachtschneider
Wisconsin



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Newsmakers

New Products and Industry News

Dor-O-Matic's New Exit Device

Dor-O-Matic has designed a new series of "school quality" exit devices that meets the rigorous demands of aluminum entrances. These slimline devices are only 3" in height with a minimal 2-3/4" projection.

The Dor-O-Matic 1490 is a concealed vertical rod device that combines hardened steel latch bolts and full width activation. Its field reversible handing provides maximum flexibility. Exterior key-hold-back is standard.



The Dor-O-Matic 1590 is a rim device which features a 3/4" throw latch bolt and a full width activation. The supplied TD 35 Strike is designed for universal application. Ideal for high traffic aluminum doors with removable mullion, the 1590 is a reversible, non-handed device.

Circle 425 on Rapid Reply

American Lock Co.'s 'Key Advantage Program'™

American Lock Company's new "Key Advantage Program"™ offers the convenience of Model 3600 and 3700 padlocks keyed to one of four popular door keyways, Kwikset, Schlage, Arrow or Yale.

Easy repinning provides the proper keying service to fit these popular door locks and the convenience of only one key for all your security needs.

Model 3600KCC (Kwikset) and 3600SCC (Schlage) are available in color coded packaging to fit American Lock Company's current plan-o-gram. Servicing requirements are clearly explained on the package.

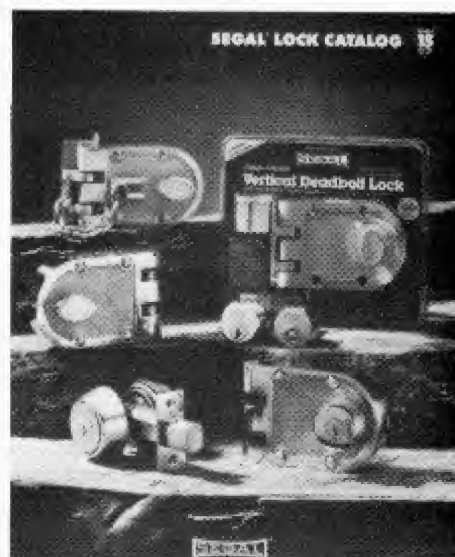
To enhance the program, an easy to understand demonstration display is available for visual impact.



Circle 376 on Rapid Reply

New England Lock's Catalog Is Available

The New England Lock & Hardware Company has completed publication of its new catalog, the Segal™ Lock Catalog #15, which is available free to the trade.



The twelve-page, full-color catalog features descriptions and photographs of the more than 150 Segal products offered by the company including cylinders, vertical deadbolts, horizontal deadbolts and latches, mortise lock products and other security accessories.

Circle 377 on Rapid Reply

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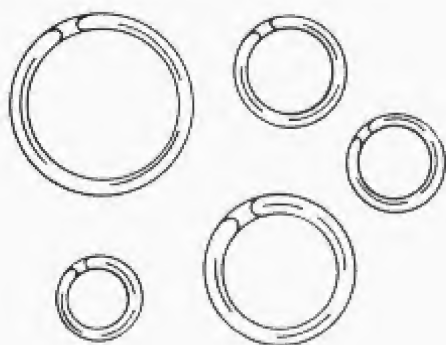
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Continued from page 18

Lucky Line's Brass Split Key Rings

Solid brass split key rings from Lucky Line are rustproof, and ideal for water sports and other marine activities.

Five sizes are now available in solid brass split key rings, from 5/8" to 1-1/8". These rings are the same thickness as our popular heavy-duty split rings.



Available 2/skin card (No. 80102, etc.) and 100/box (No. 80100, etc.). Stock numbers range from 801 to 805.

Circle 378 on Rapid Reply

American Device Presents Exit Device Catalog

The American Device Manufacturing Company has introduced an eight-page, two-color catalog describing the company's 4000 series line of narrow stile panic and fire-exit devices. The catalog presents detailed product descriptions and specifications, including U.L. listing and BHMA/ANSI certification information.

The 4000 series touch bar devices feature a simplified, heavy-duty locking and releasing mechanism.



Circle 379 on Rapid Reply

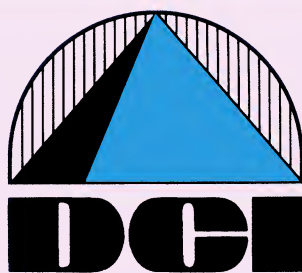
Ace Announces Free Seminars

Ace Locksmith Company in Springfield, New Jersey has announced a group of free seminars in the north New Jersey area. These seminars are aimed toward assisting individuals interested in specific aspects of access control and door hardware.

Three classes are scheduled during early Fall: "Electro-Magnetic Locking Systems," a factory conducted class by Locknetics Security Engineering; "Mechanical & Electrical Hardware," by Yale Security Co. experts who will discuss factory products and an update on life safety codes and the American Disabilities Act (ADA), and third, is an evening class representing three product discussions: "Exit Alarms & Access Control Systems"; Markar Products, Inc. - "Continucus & Reinforcing Hinges"; Norton Door Controls - "Door Closers & Holders."

Circle 380 on Rapid Reply

Continued on page 22



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Continued from page 20

McGunn's Time Delay Cash-Dispensing Safe

The SMART SAFE™, a cash-vending drop safe that deters armed robbery and reduces cash losses by closely monitoring employees, is now available from the McGunn Safe Company.



Because the SMART SAFE™ knows the personal identification numbers and normal working times of up to twenty employees, it allows only the manager on duty to enter the safe

and limits clerks to vending currency. All entry attempts, openings and vendings, including the employee, time of day, and amount, are recorded, kept in memory, and played back into a printer or on the video screen. Using this comprehensive audit trail, managers can instantly trace cash shortages and correct problems with the people responsible.

Circle 381 on Rapid Reply

American Lock & Supply's Interlock Module

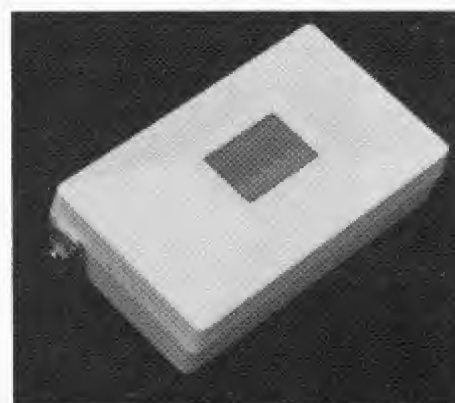
American Lock & Supply is proud to announce the release of the new Interlock software module, Point-Of-Sale.

The software allows locksmiths and security specialists to computerize cash register transactions to better manage sales and inventory. Among the many features of the system are the ability to save transactions, create sales quotes, utilize a cash register, network terminals, real-time update to inventory, support bar code scanning, allow customer discounts and interface with accounts receivable and other upcoming modules.

Circle 383 on Rapid Reply

Rodann's Battery Door Announcer

Rodann introduces its first self contained door announcer. The SL-40 is a low cost, battery operated, passive infrared sensor that emits a pleasant sounding chime whenever a person enters the detection area. This stand alone system is simple to install and is ideal for monitoring small office and shop entrances.



Circle 382 on Rapid Reply

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BMW Service, Part II

"Due to the high rate of theft, which usually results in damage to the lock, recombining a replacement is necessary to match the other keys for the car."



Send your lock and key questions to Jack Roberts, The National Locksmith, 1533 Burgundy Parkway, Streamwood, IL 60107

by Jack Roberts

In our previous article on BMW service we discussed the 1600, 1800, 2000, Bavaria, and 3.0 CS models which were produced until about 1975. All of these cars used a two key system, (ignition-door, glove box-trunk), except for the Bavaria and 3.0 models which have a dimple key valet system.

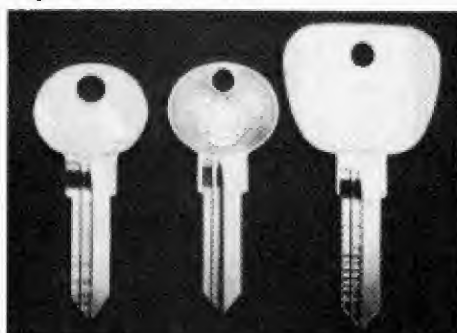
With the exception of the high security four track locks and keys which we will examine later, all BMW car locks since 1975 use wafer type locks with a double-sided, reversible valet key and master key system. Locks on these cars are keyed alike using the HB and NB code series. HB is for primary of master key and NB is for the secondary or valet key. Actually these codes are the same and we have never seen an NB code anywhere except on factory paperwork.

The broaching of the trunk and glove box locks is such that the valet key will not enter the keyway, however the master key will operate all locks on the car.

Code numbers will be found on ignition and door locks and usually have the letter prefix although some of these locks will have numbers only. If letters are not shown the HB series is to be used. All BMW cars from 1975 to 1984 use the Silca BW7 (Taylor X 59) key as the primary or master key and the Silca BW8 as the valet key. A few models in the production years 1985-1987 also use these keys although engineering changes were made in 1984 on some models which require the Silca HU50 (Taylor X 144 as the primary key. If this sounds confusing, it really isn't and we will get it all sorted out as we go along with the development of

the BMW locking system.

An easy way to tell which key is used is by the number of digits in the code. If there are four digits, use the Silca BW7 blank; if there are five digits, use the Silca HU50 blank. The difference here is the length of the blank and the number of cuts on the blade. The BW7 is a 10 cut key and the HU50 is an 11 cut key. (See photograph 1.) Ignition locks using the 10 cut key will have the full complement of wafers, but you may find 8 or even 7 wafers in some door or trunk locks. The biting array and the development of the deadlocking system for the door locks created the need for the longer 11 cut key as we will see later.



1. Different key blanks for key generation.

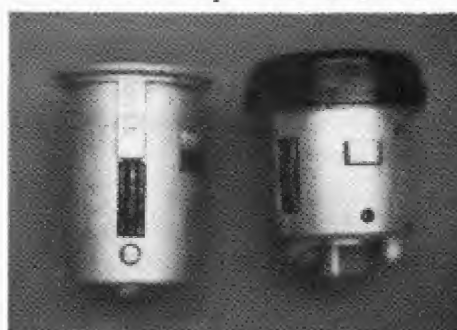
First, let's look at those model numbers using the Silca BW7, BW8, 10 cut keys. Prior to 1975 BMW used cc to designate engine size (i.e., 1602 indicated an 1600 cc engine 2 door auto). In 1975 the numbers were changed to reflect liters. Thus, the 318 has a 1.8 liter engine, the 528 has a 2.8 liter engine, etc. The first number indicates the body style which really has nothing to do with the locking system. (That is, until the 733i came along in 1984).

Letters following the model number also are not important in identifying the key to be used: "I" means that the engine is fuel injected, "CS" means Coupe Sport, "TD" is Turbo Diesel, "X" is four wheel, "L" is long body, and "E" is high efficiency engine. The model

year changes the type of locking system, 10 cut, 11 cut or high security.

Generally speaking, all models from 1975 until 1984 will use the 10 cut Silca BW7 (Taylor X 59) key blank. The exception here is the 733i, introduced in 1984, which uses the longer 11 cut Silca HU50 (Taylor X 144) blanks.

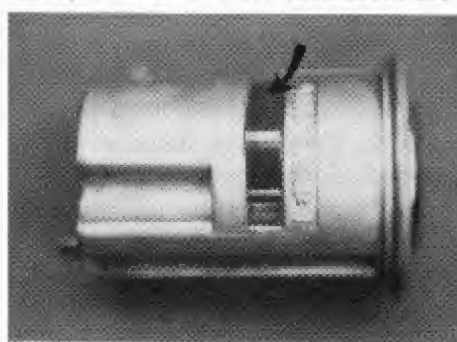
There are two types of ignition locks found on these BMW's as shown in photograph two. The lock on the left is easily removed without having the operating key and may be serviced without great difficulty. The lock on the right is found on the 318i/325e models, cannot be removed without turning to the first detent position and is not



2. Two ignitions found on BMWs.

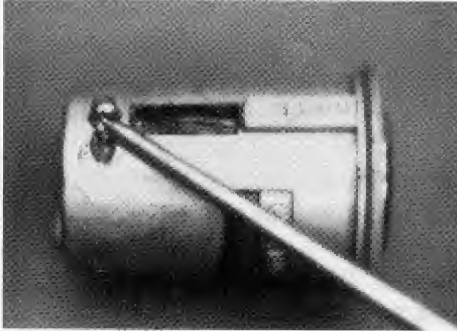
designed to be serviced.

Let's look at the easy one first. With the lower shroud removed, a poke hole will be found on the left side of the lock housing about 3/4" back from the face of the lock. Insert a poke tool, press on the spring retainer, seen in photograph three, and remove the lock from the



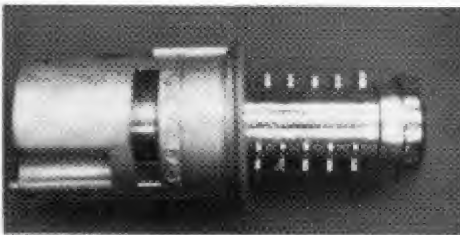
3. Arrow indicates spring retainer.

housing. It will slide right out with no resistance. The plug is retained in the cylinder by a steel pin near the front end. Drill an access hole next to the pin and use a pointed tool to lift it out of the cylinder. (See photograph 4.) Note that the code on this lock does not have the HB letters.)



4. Removing the pin which holds the plug in place.

Remove the plug carefully so that the wafers do not fall out of their respective positions. The plug may now be serviced or the combination changed as required. Note that there are 10 wafers, 5 on each side of the plug and that they are bi-directional. (See photograph 5.)



5. Note ten bi-directional wafers.

BMW uses four depths: 1, 2, 3 and 4 and the wafers are numbered as shown in photograph six. code card XF54 can be used for cutting 10 and 11 cut BMW keys by code on the HPC 1200CM.



6. Numbered wafers, 1-4.

Due to the high incidence of theft and attempted theft of BMW's which usually results in damage to a lock, recombining of a replacement is necessary in order to match the existing key for the other locks on the car. If the code is available this is simply a matter of inserting the proper wafers in their respective positions.

If the code is not available there are three choices for arriving at the proper combination. The hard way is to pull a



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door lock to get the code number. Next is to read the key to arrive at the correct code and the third way is to read the existing wafers in the new lock and change them as required.

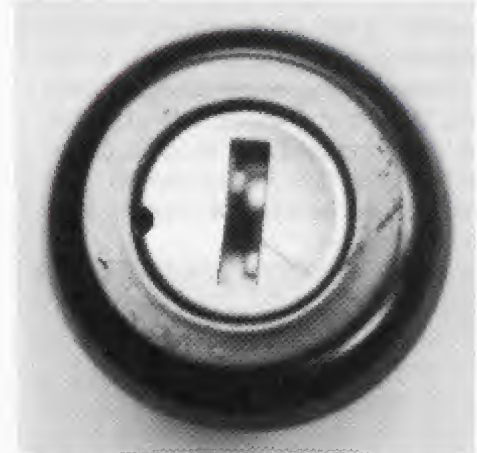
Reading the cuts on the key takes some practice but with only four depths it really isn't all that difficult. A no cut is a #1 depth with 2, 3, and 4 being progressively deeper. Note that a #4 is cut down to the first ward, a #1 is full width of the blade and 2 and 3 fall in between these two. The actual depths of cut are: 1=.327; 2=.303; 3=.280; 4=.256. Spacing from the shoulder to the center of the first cut is .107 and cut to cut is .083.

If reading the key is difficult, you can read the wafers in a new lock by inserting the key to which you are changing and, starting with the last position, look at the relation of the

wafer to the shear line. If it is above the shear line, remove it, check the number, and replace it with a higher number, if it is below the shear line, remove it, check the number and replace it with a lower number. Do this progressively from tip to bow until all wafers are at the shear line.

When the recombining is correct, replace the plug in the cylinder, replace the plug retainer pin and insert the cylinder in the lock body. Check for proper operation, replace the shroud and the job is complete.

Now, let's look at the ignition lock for the 318i/325e series. That's the one on the right in photograph two. This type of ignition lock is easily and quickly recognized by the poke hole in the edge of the plug. (See photograph 7.) The easy part of removing this lock is that the shroud does not have to be



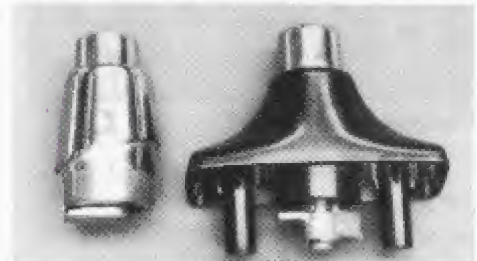
7. Note poke hole on this ignition lock.

removed. The hard part is that the plug must be turned to the first detent to access the retainer. It's easy if the key is available, but you may have to pick the lock to the first position.

However you get it there, with the plug turned, insert a stiff wire or probe (.055 is about the right size in the poke hole to a distance of 7/8"). Lift on the probe, pull on the key or the cylinder cap and the cylinder will slide right out of the lock housing. As mentioned, these locks are not designed to be serviced and although you may see procedures for disassembly, it is not practical and is not recommended.

The most cost effective way to service a damaged ignition lock of this type is to replace the lock and recombine the other locks on the car to match the new key. All BMW locks in this series are rekeyed in the same manner described, but engineering changes in the design of the door and trunk locks requires various methods of disassembly.

Different types of trunk lock bodies will be encountered (see photograph 8.), depending on manual or manual/electric operation. These locks have a design similar to that found on



8. Two types of trunk lock bodies.

the 1600-2000 series in which the chrome cap must be removed to service the wafers. This cap will have two opposing stakes which must be drilled out, very carefully, to remove the cap.

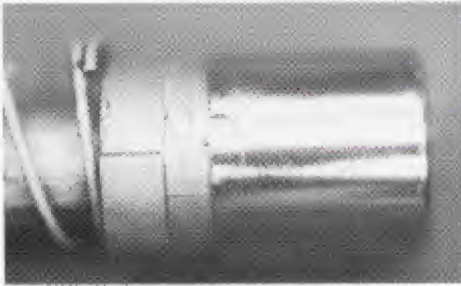
Continued on page 28



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Continued from page 26



9. Drilling stakes to remove the cap.

(See photograph 9.) Service of these locks is the same although disassembly is somewhat different.

First, let's look at the manual lock. A tru-arc retaining ring holds the lock assembly inside the lock housing. Release this ring and slide the assembly out the rear of the housing. The cam will prevent the thrust spring, thrust washer and retainer from being removed. The cam is held in place by a roll pin that is not through-drilled. To remove the cam a hole must be drilled from the other side and the roll pin punched out. The lock body may then be removed from the plug and the wafers serviced as required.

An alternate method is to drill a 3/32" hole in the cam shaft 1/2" back from the face of the cam. (see



10. Alternative method of drilling to remove the cam.

photograph 10), slide the lock body (compressing the thrust spring) back to this hole and insert a temporary holding pin. The wafers may now be serviced. After the lock is serviced, replace the cap, turning it slightly from its original position, and restake with a center punch.

Dress any burrs with a fine file so that the assembly moves freely inside the lock housing. Replace the thrust spring, thrust washer and tru-arc retainer, and, if it has been removed, replace the cam and the lock is ready for service.

Manual/electric trunk locks have the same thrust spring, washer and tru-arc retainer as described, but disassembly is slightly different. This lock has a floating cam with a detent ball and is held on the end of the cam shaft by an "E" clip. It is suggested that this lock be placed inside a clear plastic bag for

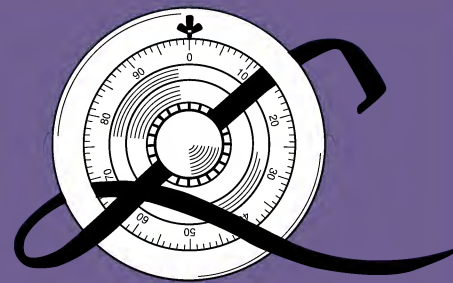
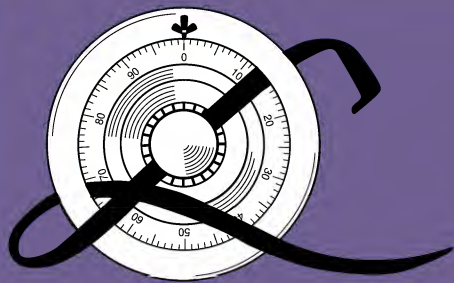
disassembly. This will save a lot of time crawling around on the floor trying to find a couple of teen tiny ball bearings that will fly out at you. We call them BMW Bullets!

Remove the "E" clip and slide the cam off the end of the shaft, this is where you will find the first "tiny ball." Don't worry about where it came from, just don't lose it, we will get it back in place later. Remove the tru-arc retainer (carefully, it can come out with some force), the thrust washer and thrust spring, and slide the assembly out the rear of the housing.

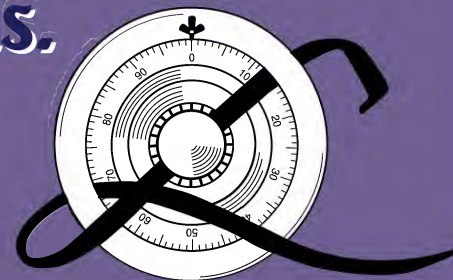
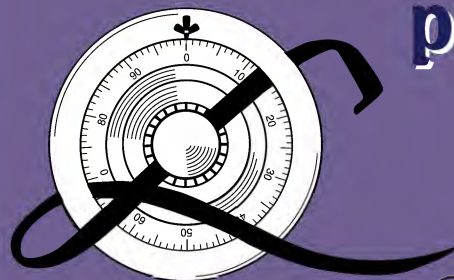
The cam shaft is attached to the end of the plug by a roll pin which can be driven out with a small punch. Remove the cam shaft and the centering spring noting the position of the spring. Remove the chrome cover from which the stakes have been drilled, exposing part of the plug. Now, with the assembly inside a clear plastic bag, slide the lock body off the plug and you will find the next tiny ball. Don't worry where it came from, just don't lose it!

Service the wafers as required and as explained previously and then we will start reassembly. (Note that this lock uses only seven wafers although you may find eight.) (See photograph 11.)

Continued on page 30

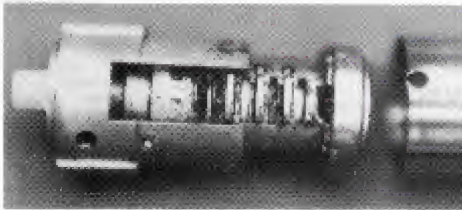


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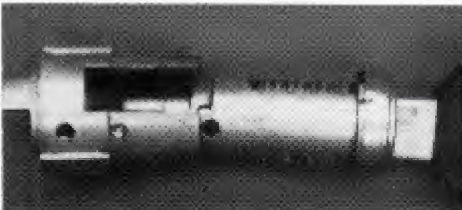


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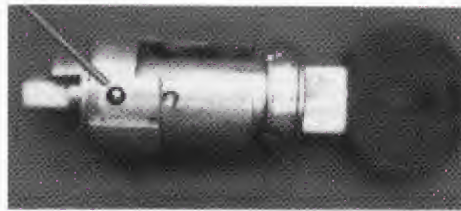


11. View of disassembled trunk lock.



12. Align plug hole and access hole.

To replace the first tiny ball, there is a hole near the end of the plug and an access hole near the end of the lock body. With the operating key inserted and the wafers at the shear line, align these holes (see photograph 12), and slide the body onto the plug. Insert the ball spring and the ball into the access hole and with a small punch, press on the ball while pushing and turning on the lock body. (See photograph 13.) This should be done inside a clear



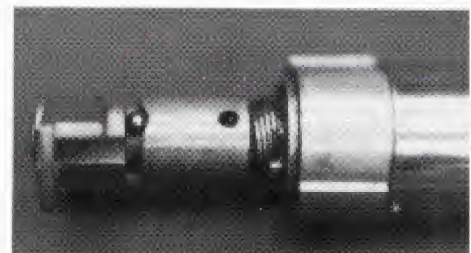
13. Inserting the ball spring and bolt.



14. Properly positioned plug and body.

plastic bag! When the ball is properly aligned with the detent inside the lock body, the plug and body will slide into the proper position. (See photograph 14.)

Remove the key and replace the chrome plug cover staking it into position with a center punch. Dress the edge of the cover with a fine file so that it will slide smoothly in the lock housing. Replace the plug return spring, cam shaft and roll pin. Insert the assembly in the lock housing followed



15. Cam detent spring and ball reinstalled.

by the thrust spring, thrust washer and tru-arc retainer.

There is a hole near the end of the cam shaft for the cam detent spring and ball. Replace the spring, gently place the ball on the end of the spring and slide the cam up to the ball. (See photograph 15.) (Note that for clarity the assembly has been removed from the housing and that the thrust spring, washer and retainer are not shown.) Using the thin edge of a flat screwdriver, press on the ball while pushing on the cam and it will slide into place. Replace the "E" clip on the end of the cam shaft and the unit is ready to be reinstalled in the automobile.

Next month we will look at various BMW door locks, the eleven cut and the laser cut. §

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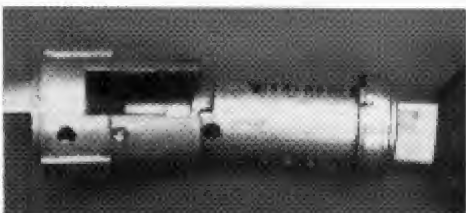
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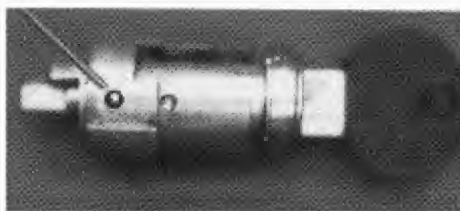


11. View of disassembled trunk lock.

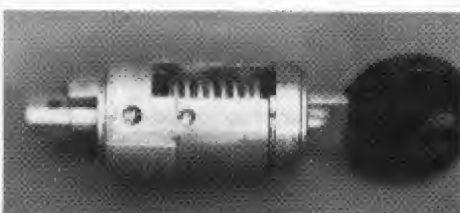


12. Align plug hole and access hole.

To replace the first tiny ball, there is a hole near the end of the plug and an access hole near the end of the lock body. With the operating key inserted and the wafers at the shear line, align these holes (*see photograph 12*), and slide the body onto the plug. Insert the ball spring and the ball into the access hole and with a small punch, press on the ball while pushing and turning on the lock body. (*See photograph 13.*) This should be done inside a clear



13. Inserting the ball spring and bolt.



14. Properly positioned plug and body.

plastic bag! When the ball is properly aligned with the detent inside the lock body, the plug and body will slide into the proper position. (*See photograph 14.*)

Remove the key and replace the chrome plug cover staking it into position with a center punch. Dress the edge of the cover with a fine file so that it will slide smoothly in the lock housing. Replace the plug return spring, cam shaft and roll pin. Insert the assembly in the lock housing followed



15. Cam detent spring and ball replaced.

by the thrust spring, thrust washer and tru-arc retainer.

There is a hole near the end of the cam shaft for the cam detent spring and ball. Replace the spring, gently place the ball on the end of the spring and slide the cam up to the ball. (*See photograph 15.*) (Note that for clarity the assembly has been removed from the housing and that the thrust spring, washer and retainer are not shown.) Using the thin edge of a flat screwdriver, press on the ball while pushing on the cam and it will slide into place. Replace the "E" clip on the end of the cam shaft and the unit is ready to be reinstalled in the automobile.

Next month we will look at various BMW door locks, the eleven cut and the laser cut. §

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Manufacturer Profiles

In this section, you will read about the background and history of many of the companies serving the locksmith and security industry.

American Lock Company

In 1912, following his arrival from Hungary, John Junkunc worked as a railroad machinist in Boise, Idaho. As a natural mechanic and inventor, he designed and built a number of small tools which were used to make his work a little easier. One of these small inventions was a keyless (combination) padlock which he invented out of necessity because he was constantly misplacing keys for the regular padlocks used on the job.

Fellow workers were so fascinated with this unique keyless padlock that the young inventor devoted most of his spare time to filling orders for his new padlock. Eventually, he gave up his regular job with the railroad and worked full-time manufacturing combination padlocks.

As a result of the popularity of the combination padlock invention, John and his family moved to Chicago where he began a manufacturing operation in the expanded basement of his family home. In 1919, the company moved to larger facilities and acquired the American Lock Company, a manufacturer of cylinders. More inventions followed, most notably the now famous double ball-locking mechanism, which is recommended by the National Crime Prevention Institute.

Its design has become standard equipment on most security padlocks on the market today. Hardened shackles and solid extruded brass padlocks were also

introduced. After moving to one final location on Chicago's south side, the rapidly growing company settled into its permanent home in Crete, Illinois, 30 miles southwest of Chicago, in the early 1960's.

Throughout the years, American Lock Company added innovative products and packaging used in the security industry, including five, six and seven pin tumbler padlocks, shackleless locks (Series 2000), and the 747 shrouded shackle padlock. The solid steel Model 700 continues to be the flagship padlock.

Because of its progressive involvement in the industry and constant monitoring of current market trends, American Lock continues to introduce new products including a Multi-Cylinder system, built to upgrade existing interchangeable cylinder padlocks, the 20 and 40 series solid brass padlock and a Safety Lock-Out system providing color-coded aluminum body padlocks for easy identification.

Most recently, American Lock Company introduced three new products in the locksmith industry: Weatherbuilt Plus™ for maximum outdoor security; Model 5300 and 5360 solid steel 1-3/4" and 2" shrouded shackle security padlocks to complement their current Model 747; and the "Key Advantage Program™," which offers the ability to match your padlock key to your door key with four popular keyways. These innovative new products confirm

American Lock Company's continued growth in the security industry.

Whenever a need is identified, American Lock's experts apply their technical knowledge to its solutions.

Circle 387 on Rapid Reply

Arrow Lock Company

Arrow Lock manufactures a broad range of locks and accessories, door closers, exit devices and alarms for commercial, institutional and industrial construction.

Mortise locks and cylindrical locks are available in heavy duty and standard models and are designed for use in schools, hospitals and commercial building where security, durability and low maintenance are required. Arrow products are engineered for strength and performance, and are precisely manufactured to exacting standards. Quiet, smooth, dependable operation is always guaranteed. There are a variety of related knob and lever designs and functions. Auxiliary locks are obtainable in extra heavy-duty deadlock, heavy-duty deadlock and mortise deadlock.

Three series of door closers are manufactured to fit regular, top, jamb and parallel arm applications. All three series feature adaptable door control and rugged construction, with fully adjustable backcheck feature with separate backcheck valve and a limited five year warranty.

Continued on page 34

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Continued from page 32

Arrow exhibits a full line of exit and fire exit devices ranging from sleek, low-profile touchbar for standard and narrow style applications to the traditional crossbar.

Exit devices are manufactured for doors 24" to 48" wide, are U.L. listed for life safety and are non-handed. To complement the exit device line, Arrow offers a stand-alone alarm, an exit alarm by paddle and exit alarm by push bar, which is available with a UL label for three hour fire doors. All three alarms are powered by a 9V battery.

All Arrow products are designed to accept the interchangeable core (I.C.) option, and provide flexibility and convenience combined with the highest level of security. It allows quick, easy combination changing when the security of a system has been breached and is designed to fit cylindrical locks, ANSI grades 1 and 2; deadlocks, tubular and mortise, ANSI grade 1; mortise locks, ANSI grade 1; cylinders in both mortise and rim type and padlocks.

Customers can select from a full line of tools and service equipment which includes a portable key combinator, keying kits containing all parts needed to combine Arrow interchangeable cores or standard cylinder cam assembly tool and the core capping machine which caps all 6 or 7 pin cores. Replacement cylinder packs are available in a multitude of competitive keyways for use with cylindrical locks and deadlocks. Each pack contains one brass cylinder, two brass key blanks 5 pin, one plug removal tool and appropriate tailpieces.

Circle 388 on Rapid Reply

Auth Chimes

The Auth Electric Company would have been 100 years old next year. Established in 1891 it remained in the founding families hands until the 1970's when it was bought and sold by three successive mini conglomerates.

Finally in 1990 Auth Electric was absorbed into another company producing similar lines except for the Chime division which was sold separately and will operate independently. Jonathan Ingham, the new owner and president of Auth Chimes said "I had gotten to know the company well through my work with the previous corporate owner and I realized that the chime division was a gem of a company that deserved better than to dwindle away through neglect."

Over the last ten years Auth Chimes received little or no corporate support or attention, yet sales stayed reasonably healthy. "The first thing I did was spend

a day taking it apart and putting it back together," said Ingham. "It's a wonderful design."

According to Ingham, millions of these locksmith installable door chime/viewers are in circulation, working fine. The only things that need replacing every ten or fifteen years are the four grommets which hold the chime bars in place. He states that the replacement business doesn't come about because they break, but much comes from the renovation and unfortunately some comes from the fact that in high turnover rental units, the tenants often do not respect the premises.

Auth Chimes will guarantee their unit for the life of the building given normal wear and tear. In the unlikely event that the entire unit needs replacing they direct customers to send it back and they'll send out a new one. More often than not one of three simple adjustments is all that is required. Each chime comes with a complete set of easy to follow instructions.

Although the product itself was time tested, there was a lot of room for improvement in the way the business was conducted, mostly in the area of customer service. While big companies benefit from economies of scale, they often fall down in customer service, particularly when that function is many steps removed from the companies policy making. The first thing they did was to build up a complete finished goods and parts inventory in order to promise same day shipments. The customer response to this has been terrific.

The company added some different finishes which enabled them to expand the line without incurring tooling costs. They also figured out a way to use other viewers so as to accommodate different requirements. Adding color coordinated engraved name tabs and can custom powder coat escutcheons for special decorator matches, should insure their position in the market.

What makes the real difference is that the whole company has an enthusiasm which has been missing for years. Look at any successful company and you will find a group of enthusiastic people working towards a common goal, and this is the case as they rebuild the Auth Chimes Company.

Circle 389 on Rapid Reply

Bonafide Factory Products, Inc.

Bonafide Factory Products, Inc. started in 1978, by Marvin Sobel and Irving Plaksin, for the purpose of developing, manufacturing, and

marketing security products. It sought to take advantage of a market niche which had been largely ignored by larger firms in the industry. Bonafide Factory Products, Inc. developed the Perma-Vault, which is a stand-alone, all steel safe, initially designed for in-home use by consumers and as a hotel in-room safe deposit box.

However, with the development of an innovative cash slot and anti-fish baffle for its interchangeable locked top, the product was able to be used effectively for commercial application as a temporary cash storage box ("drop box") at retail cash register stations, on trucks, offices, etc.

The design of the box is sufficiently unique, in permitting tops to be interchanged for different applications or uses, that Bonafide Factory Products, Inc. was issued a U.S. Patent. Patents were also issued abroad, and the name "Perma-Vault" is trademarked throughout the world.

Bonafide Factory Products, Inc. distribution system is provided by a network of independent locksmith distributors in targeted markets, backed up by advertising to the trade and participation in trade shows. To further assist our distribution, John McDonnell was retained as our national Vice President of Sales and Marketing.

Since the original Perma-Vault was introduced (6" x 6" x 11-1/2") four additional sizes have been added. A uniquely designed wall safe, with a hidden hinge that can be flush mounted was also introduced, along with a line of affordable rotary hopper safes.

With the support of our loyal locksmith dealers, Bonafide Factory Products, Inc. looks forward to adding even more items to support their distributors and dealers.

Circle 390 on Rapid Reply

Briggs And Stratton

In 1902 Steven Foster Briggs was introduced to Harold Mead Stratton and a partnership was formed. Among many of the patents filed by B.A.S.C.O. (Briggs and Stratton Corporation) are such commonplace components as window regulators, oil filters and cushion action starters with an overriding clutch. In 1922 Briggs and Stratton produced padlocks which could be keyed to the car. This allowed the owner to use the car's key to unlock the spare tier.

Briggs and Stratton corporation is the oldest and largest manufacturer of automotive locks and keys in the world. From their 318,000 square foot manufacturing plant, they can produce as

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many as 250,000 lock sets a day, each set consisting of three to eight separate components.

Briggs and Stratton's relationship with the locksmith dates back to 1922 when service manuals were published with detailed application information. This opened up an entirely new business opportunity for the locksmiths of the day. To further assist these early pioneers of the automotive locksmith business, Briggs and Stratton produced a key cutter which would reproduce almost any automotive key blank. A depth measuring tool was included with the cutting machine so that reproduced keys could be code cut.

Training seminars were offered to the locksmith at local association meetings and trade shows from 1922 through today. For the past seventy years Briggs and Stratton has offered hands-on training and update programs in hundreds of different locations all over the U.S. and Canada. The authorized wholesale, distributor for Briggs and Stratton products in your area can direct you to the next program offered for the locksmith.

Briggs and Stratton had recently started distributing VATS tools which assist the locksmith in the interrogation process of VATS equipped vehicles for which the keys have been lost. Service bulletins with application information have been distributed to Briggs and Stratton service manual holders and copies of this information is available from authorized Briggs and Stratton distributors.

Any additional questions or assistance you may require in servicing VATS systems or any Briggs and Stratton product, can be directed to your authorized Briggs and Stratton distributor or the territory managers in your area.

Richard DeLeon is the Briggs and Stratton Territory Manager for all areas east of the Mississippi river. Robert Walkling is the Territory Manager for all areas west of the Mississippi. Please stop and introduce yourself to these gentlemen at association trade shows and distributor in-house shows. They are factory trained to assist you in all your service questions, and I think you will find them very helpful in any of your Briggs and Stratton service needs.

The partnership in quality between Briggs and Stratton and the automotive locksmith is a valuable link in the automotive service industry. Because of the evolution of high security lock systems in automotive manufacturing, the role of the automotive locksmith will become more and more important in the

eyes of the consumer. Briggs and Stratton will continue its commitment to training and education in this partnership.

Circle 391 on Rapid Reply

ESP Lock Corporation

The ultramodern facilities of ESP Lock Corporation are located in Leominster, in central Massachusetts, the heart of perhaps the most highly sophisticated industrial region of the United States. Being located in this area allows ESP to employ top machinists, tool makers and technicians. As a result, ESP can provide their customers with only the finest precision-made products manufactured to rigidly set standards of quality and craftsmanship.

ESP's "Made in America" quality key machine and locksmith tool lines include the 1000 (Manual, 12V Manual and Slot Manual), 5000 Automatic and the 3000 (Lever and 12V Lever). These precision key cutters include the following features: nylon brushes, wider jaws to cut today's larger keys; strong 1/4 HP motor; high speed steel cutters; black oxide, hardened reversible steel jaws; and are available in 110-volt or 12-volt models.

Locksmith tools manufactured by ESP include their Kolor Koded Pin Kit Assortment (KK-80), an anti-spill pin kit with extra deep compartments that hold over a gross of pins with additional room available. A durable heavy-duty case with a formica top features drawers. The case is also available without the pins.

Other ESP tools include their decoding and spacing gauges which allow the locksmith to decode and check domestic and foreign auto keys. The gauges are ideal for use during impressioning and for checking the space and depth accuracy of your duplicator or code machine. The ESP Tubular Key Stamping Block is designed to help make the job of stamping the head of a tubular key much easier and safely. Made of hardened steel, the block is designed with hollowed out chambers in which the barrel of the tubular key rests. The head of the key lies on the flat steel surface, providing a solid base for stamping.

These products and more are detailed in ESP's comprehensive full line catalog, which reflects their philosophy of providing the fast and efficient service you require, and deserve.

Circle 392 on Rapid Reply

Gardall Safe Corporation

Gardall's ownership changed for the third time in 36 years during July 1986. The new owners are David Patton and



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Edward Baroody. As was true with the Falso's, the new owners are dedicated to continuing the Gardall tradition of manufacturing premium quality safes with strong construction and handmade extras that are not available on imported safes. Gardall sells and distributes its products through a strong network of stocking distributors. This program was designed to make it easier for locksmiths or safe dealers to get products faster, at a more competitive price, and with reduced and sometimes eliminated freight costs.

Gardall Safe Corporation manufactures a full line of insulated safes which are constructed of materials which make them heavier and stronger than other competitive products. Their small and medium-size insulated safes have the UL one hour 350 degree label. The larger insulated safes have a factory tested two hour 350 degree label.

Gardall's unique "Z" series safe is an insulated safe with a "B" rated burglary construction money chest welded inside its interior. The company still continues to manufacture a high quality line of rotary and front loading depository safes, floor safes and wall safes.

Gardall recently designed the "In-Floor Safe" line, with an aim of producing a quality unit at a more competitive price. They also added key and combination safe doors that will

interchange with each other as well as most other safes in the burglary line. The interchangeable doors will make it easier to remove a door, in case repair is necessary, or for interchanging a key for a combination operation on any burglary safe in stock. All Gardall safes are equipped with Sargent and Greenleaf locks, dials and dial rings.

Gardall recently moved its factory and offices to a new location. Though still located in Syracuse, their new state-of-the-art facility has 60,000 square feet, which is twice as much manufacturing space as before. The new facility has an improved material flow which gives Gardall the opportunity to increase its productivity and expand its product line.

At the recent ALOA Show in Anaheim, Gardall released 3 new products: a gun safe; a pistol safe and their Group 2 Electronic Lock option. All of the new products were received well by the locksmiths attending the show and are currently in production.

Circle 393 on Rapid Reply

HPC, Inc.

HPC, Inc. has been manufacturing security products for 35 years. HPC continues to expand into new areas, as well as widen its product line, while remaining true to its primary market, locksmiths. HPC has a commitment to

the industry based on two ideals: dedication to unsurpassed quality of its products and the guaranteed satisfaction of its customers. This philosophy has proved to be the cornerstone of HPC.

HPC specializes in manufacturing products for locksmithing, security, industrial, office and automotive markets. These products include a wide array of key duplicating machines, including the famous 1200CM code cutting machine and Codemax (1200MAX) the original computerized code machine (with fully compatible software). Two new additions to the HPC key machine line include the Automate™ (6666HQT) fully automatic key duplicator and the 1200PCH Punch Machine. The Automate™ is an old favorite that HPC has re-introduced after some engineering improvements. The all-new 1200PCH Punch Machine works on the same principal as the 1200CM Code Machine, yet is completely portable (late December availability).

HPC also manufactures a complete line of security key control systems including metal key cabinets (Keykabs) for both key control and key security (ranging in capacity from 8 to 730 keys in either a one or a two tag system), specialized security cabinets (Chem Kab and Medi Kab), key control racks and

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key keeper boxes.

HPC also manufactures an extensive line of door hardware and guard plates designed to protect all types of doors and door locks from unauthorized forced entry. They offer a wide selection of locksmith tools, picks and pick sets, car openers and other related products. Everything from pins and springs to precision micrometers and assembly tools are available through an Authorized HPC Distributor.

HPC is a major publisher of technical manuals, a bi-monthly publication, textbooks and leads the industry with up-to-date code books and code referencing material. The code books provide over 9000 pages (over 12 books) of lock codes and lock code information from around the world.

HPC Soft, the software division of HPC, produces standard-setting software programs for the industry in code management, standard masterkeying, removable core masterkeying, key blank cross referencing and key control record keeping. HPC Soft's newest program is its Five Level Master Keying Program (FIVE-525 & FIVE-350), which will be available in early 1992. HPC Soft provides software solutions for 80 percent of the computers used by locksmiths nationwide.

The HPC Learning Center, a division of HPC, sponsors courses in basic and advanced locksmithing. The facilities contain state-of-the-art key machines, audio-visual equipment and a model locksmith shop. Classes feature in-depth lectures with exploded view transparencies and extensive hands-on training.

HPC Services Division is devoted exclusively to the HPC customer. Through a toll-free 800 number, an HPC service technician can answer questions, help with repairs or needed parts, give technical advice or help solve problems.

Whether you're a novice locksmith or a seasoned veteran, HPC is able to fill all of your locksmithing needs with its wide range of products and services.

Circle 394 on Rapid Reply

Kustom Key

About to celebrate its 20th anniversary, Kustom Key, Inc. is the manufacturer and direct supplier of the famous K3 Neuter Bow. From its manufacturing and business offices facility overlooking the beautiful Colorado River in Lake Havasu City, Arizona, Kustom Key provides the institutional and professional locksmith with first quality key blanks.

Its highly popular K3 Neuter bow

with its special head shape along with no identifying brand name or number, reduces easy identification of the keyway. This product allows the locksmith to offer his clients a key that provides for increased security as opposed to the standard look alike available in most any store. The K3 is available incised with popular messages such as "Do Not Duplicate" or custom logos and messages.

Kustom Key is also known for its highly attractive and durable large bow key blank, a popular choice for on and offsite locksmiths serving the lodging industry. These blanks as with all styles manufactured are available in brass or nickel silver in over five hundred keyways, many of those which are sometimes difficult to find.

Their dedication to and respect for the locksmith professional has earned them the reputation of having one of the finest quality control and customer service programs in the industry.

Circle 395 on Rapid Reply

Mas-Hamilton Group

The X-07 was engineered to be totally uncompromising. It has designs to protect against every known form of attack. It is impossible to X-ray or manipulate. There are no wheels, autodialing is totally impractical. A sophisticated set of software protects against autodialing and robotic manipulation. It was tested and engineered to reject attack by physical shock and/or vibration. It is impervious to magnetic attack. The lock's radio frequencies cannot be translated into information which could compromise the lock. It resists ESD and/or electrical shock. In testing, the lock was hit with 250,000 volts 60 times directly on the dial with no effect whatsoever.

The X-07 lock thinks. Its unique design has 27 patented features with 31 more pending. The engineering team has combined a computer, power plant and lock in one compact unit. The unit is the exact same size and footprint of the industry standard conventional combination lock (approximately 3" by 2" by 1"). This makes retrofitting possible in as little as 15 minutes.

In a conventional combination lock, gates on wheels line up and a fence falls into the gates allowing the user to retract the bolt. In the X-07 all the necessary electrical energy needed to power the lock is created by turning the dial, totally eliminating the need for batteries or external power source. Once the electronics are powered up the user can begin entering the numbers of the combination.

Each time the user enters a number,

the micro computer regenerates a random number for a new starting point. The correct combination is stored in the computer's memory. The lock has a total and true scramble making backdialing and day locking impossible. There are no dead zones, therefore, there are a true 1,000,000 combinations instead of the 300,000 to 600,000 you have with conventional locks.

The X-07 comes with many standard features not found on any other lock. These include keeping an audit trail of all successful and unsuccessful attempts to open the safe. This allows the owner to determine if anyone had attempted to open the lock. The unsuccessful attempt count resets with each correct opening.

Another feature is the ability to program three different modes of operation into the lock. In Mode 1, the lock operates like a standard lock, requiring that you only dial a single three digit combination. In Mode 2, two separate three digit combinations must be dialed within 40 seconds of each other to open the lock. In Mode 3, again two combinations must be dialed, one is a Senior combination and the other a Subordinate combination. The Senior combination must be entered before the Subordinate combination can be used to open the lock.

The Mas-Hamilton Group is a progressive, well-rounded, high-tech organization that has proven that technology does not have to be frightening.

Circle 396 on Rapid Reply

National Cabinet Lock

National Cabinet Lock was founded in 1903 in Rockford, Illinois. Since August, 1982, National Cabinet Lock has been located in a 140,000 square foot facility in Mauldin, South Carolina.

Backed by over 88 years of lock manufacturing experience, National Cabinet Lock has developed a complete "Stock Locks" program tailored to the locksmiths' needs.

With over 650 stock keeping units this program provides a wide selection of pin tumbler, disc tumbler, lever tumbler and barrel key locks to fit practically every application. Backed by a large factory inventory, orders can be shipped within 72 hours.

Pin tumbler and disc tumbler locks are stocked with multiple key change options, thus eliminating the need to rekey orders. Simply order locks keyed to your customers requirements. Locks are also stocked in various finishes, including bright and dull chrome, bright and satin brass, antique brass and bright

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nickel.

A display board program is also available to assist your customers in the selection of their locks. Ten boards are available showing most of the Stock Lock products. All locks, which are individually polybagged, come packaged with installation hardware and complete instructions.

Circle 397 on Rapid Reply

Rofu International Corporation

Rofu International Corporation can trace its roots to the Switzerland of the early 1920's. Around 1922, Mr. Peter Rothfuchs Sr. established a technical company near Zurich to capitalize on the growth in the application of electricity to specialty processes. By identifying specific areas of need and developing the products to meet those needs, the company, Rothfuchs Ing. AG was able to establish itself in a number of market niches.

One of Mr. Rothfuchs' descendants noticed during a visit to the U.S.A. in the late 1970's that the American market for electric door strikes could be served well by adapting European strikes to the locksets made by American

manufacturers.

While doing his market research it became obvious to the younger Peter Rothfuchs that a simpler product name would be mandatory if he wanted to avoid spending the better part of each telephone conversation spelling his name. Thus the product name "Rofu" was born.

A number of "Old -Timers" in the locksmith and distribution fields provided much appreciated input while the finishing touches were made to the initial product line.

Acceptance of this line was slow at first. However, strict adherence to the basic marketing plan, stringent quality control and reasonable pricing resulted in an ever increasing distributor base and sales volume.

Soon after the electric strikes were introduced, the NFPA revised its guidelines and allowed delayed egress on emergency exit doors. Electromagnetic locks could now be added to the product line with the assurance that the market would be there.

The market has responded with a vigor that exceeded the most optimistic sales projections. In May of 1989 an entirely new manufacturing operation with three times the capacity of the old facilities was put on line to help meet the

demand for electromagnetic locks. That demand does not exist in the U.S.A. only; Rofu is a true international corporation and its products are installed all over the world.

Over the years Rofu has expanded its line to include not just a full range of strikes including high security models and magnets both with a variety of features, but also a larger number of accessories to help make the installer's job easier. Key and exit switches, time delays, rectifiers, transformers, switches, monitoring, plates, brackets and housings are all available from or through the Rofu distributors.

Rofu International Corporation offers you the best of two worlds: European Solidity and American Entrepreneurship, American Inventiveness and Swiss Precision Engineering, but above all service, easily recognized but not always found.

Circle 398 on Rapid Reply

Sargent & Greenleaf

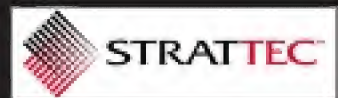
S&G traces its history back to 1857, when locksmith and inventor James Sargent was working as a salesman for Yale and Greenleaf Company, located in Shelburne Falls, Massachusetts. To demonstrate the superiority of his employer's locks, James Sargent mastered the science of lock picking, and he soon became so proficient that even

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Cary Safe Opening

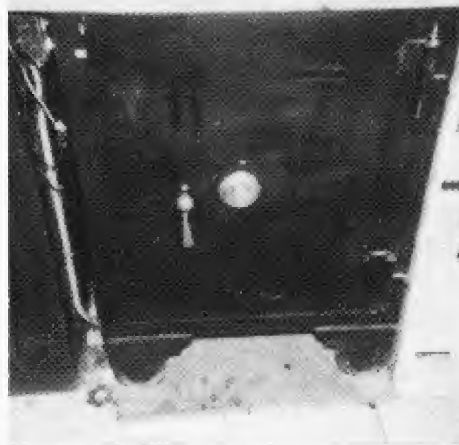
"I determined that the unit was a Cary money chest. Someone had drilled into the safe at about 12 o'clock but was stopped by the hardplate.



by Dale Libby

Sometimes I enjoy working on really old safes and money chests simply because of the challenge. I do not like repairing old safes when new parts will not conform and the unit cannot be effectively retro-fitted with a new combination lock. We all know that story.

I was called from Kenosha, Wisconsin to open a Cary inner money



1. Cary safe, outer view...

chest. Ray, the owner, described it to me on the phone. After listening to a



2....and inner money chest to be opened.

jumble of measurements, I asked him to send me some pictures of the unit, and I

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would quote a price. I usually will not travel out of state unless a fair price is agreed on in advance.

Ray did more than that; he made a accurate drawing of the outer and inner units and took photos of the unit (*see photographs 1 and 2*), and hand delivered them to me. I determined that the unit was a Cary money chest. Someone had tried to drill into the unit at 12 o'clock but had only gone through the first soft layer of metal and had been stopped by the hardplate.

We agreed upon a fair price and I went to my safe book library to look up Cary safes and any notes on them that I had. In the *HPC Safe and Vault Manual* it talked about different locks, including straight tailpiece locks and Yale type roller bolt combination locks. The part that concerned me was in the opening instructions. It said to "burn" in at a specific location. This is in deference to

the usual instructions to "drill" in at a given point.

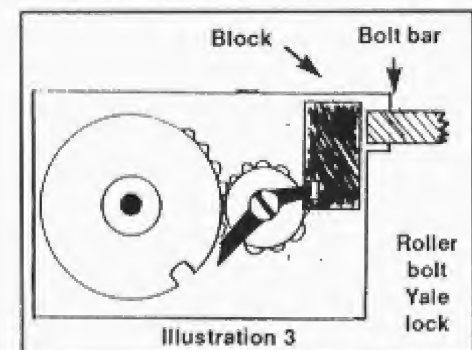
The manual was confirming my hunch that this would be hard to drill, and it was. I first tried manipulation and could only feel one contact point, a good indication of a roller bolt gear operated lock. There were also four wheels in the lock and a drive wheel. This was determined by dialing and wheel counting from outside of the unit. Sometimes a four wheel manipulation can take a lot of time, so I decided to continue drilling in the hole started at the top of the dial ring.

I was worried about the laminated hardplate/softplate. There was nothing to be distressed about, however, because the drilling was easy, as long as I used two drills: one drill for the hardplate in my Lee rig; and a regular drill bit in another drill that I used to penetrate the three inches of hard and

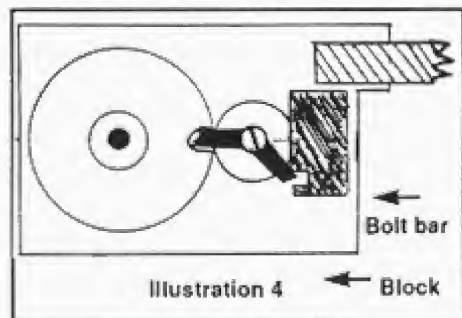
soft metals. Three hardplate drills were sacrificed in the contest.

Once through the several layers, I used my borescope to determine the relative combination, and then I transferred the readings to about the 65 position on the outside dial ring and the door opened with a right turn of the dial to "stop."

This is a modified roller bolt lock that if correctly dialed, when the dial is turned to "stop," a bolt blocks moves downward allowing the bolt bar to be moved into the interior of the combination lock. The movement is only 1-1/2" and it is enough to pull the tri-bolt bar back into the safe door cavity. (*See illustration 3.*)



The combination lock is a four wheel hand change Yale type lock with movable flies. It is what I like to call a roller bolt lock. Both the drive wheel and the cam wheel are geared and are friction fit. When the gates are lined up and the lock is working correctly, with the last turn the fence will move and turn into the gates allowing the inner bolt block to move. (*See illustration 4.*)



Care should be taken with these locks, and they should be inspected conscientiously whenever the combination is changed. Lubrication should be sparing and all parts should be cleaned.

An interesting note can be added. Once I removed the inner wheel pack, I could see that the safe had been drilled before, at 6 o'clock and close in to the dial spindle. I had forgotten that on some locks made by Yale for the early safe manufacturers, the dial can be

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The Lighter Side

Foiled Again!



by Sara Probasco

"What are you doing?" I asked Don, watching as he rummaged through his tool box.

"None of your business," he replied. Scowling, he muttered something under his breath and pawed deeper.

"Can I help you find something?" We have this pact: I help him find misplaced objects, and he helps me remember things.

"No. It's around here, somewhere." He shifted his search to a larger tool box on the floor in the far corner of the room.

"What is?"

"That bigger hammer you referred to in your article, last month. I'm having trouble getting a lock apart."

For a moment I thought he was serious, then I caught a tiny twinkle in his eye. "Come on," I chided. "What are you up to?"

"You can't leave it alone, can you?" Straightening, Don glared at me impatiently. "Well, if you must know, I'm looking for the keys to my service van. I've lost them, somewhere."

"Oh, is that all?"

"What do you mean, 'Is that all?' I can't go very far without them. Besides, it's embarrassing."

"I have a spare set in my purse. You can make some new ones for yourself."

"That's not the point," he retorted. "Do you have any idea how it makes me feel to lose my keys? I am a Certified Master Locksmith, the man whom everybody calls to rescue them when they're locked out of places. It's downright humiliating."

"Come on, now, Don," I said, trying to comfort him. "It shows that you're human. Besides, this isn't nearly so bad as the time you locked your keys inside your van in front of that wholesale lock supply house in Lubbock. Remember? I

thought you'd never get it open."

"You're not the only one," he mumbled.

I glanced at him out of the corner of my eye. "Of course, it would have been a lot easier if you'd simply gone inside and asked to borrow someone's opening tools, instead of using that old coat hanger from the trash barrel."

"You know why I didn't. James would never have let me forget, if I had asked to use his tools. Why, I'd still be hearing about it from all the guys up there."

"You do, anyway. It was a bit difficult to hide the fact that you were locked out, with you going from door to door, fishing about with a coat hanger. They were all standing there, laughing and watching you through the plate glass window." Picturing the scene, I couldn't restrain a giggle.

Don glared in silence.

"Oh, Honey," I said apologetically, "let's face it. The world didn't come to an end. You certainly aren't the first to lock up your keys, and you won't be the last, thank goodness. Just remember, your expertise in opening vehicles helped pay for all this." I spread my arms and turned to include the shop around us.

Then I couldn't help giggling again.

"Now what are you laughing about?" Don asked.

"Oh, nothing," I replied.

"Come on, out with it. You know how I hate your little private jokes."

"I was just remembering that day, last summer, when you were showing the grandchildren around the shop."

"What about it?"

"Remember when you picked up little Jacob and walked around with him, showing him the keys on the board and the machines? Then you wandered back here to your nasty, old cluttered work bench and said, 'Just think, Jacob, some day all this could be yours.' " An errant grin spread across my face.

"I fail to see the humor." Don's jaw was beginning to jut.

"Never mind."

"No, you started this. Go on."

"I just thought we'd never get Jacob to quit bawling, that's all." Despite my valiant efforts to maintain a straight face, the giggles burst through.

Don didn't say much to me the rest of that day.

As I made a new set of van keys for him, I began to wonder how I could cheer him up. What he needs is a good laugh, I thought. He's been taking himself too seriously, of late. Like his reaction, last week, to the stranger who walked into the Holiday Inn lounge and asked, "Where will I find the local car thief? I've locked my keys in my car and need somebody to open it for me, quick."

Don found no amusement there.

I was sure I could think of something humorous to share with him, if I put my mind to it. My thoughts flitted to an experience recently shared with me by a locksmith from the Forth Worth area.

At the end of a long and frustrating day, he had received a call to unlock a car. He quoted his price for the service, to which the caller replied, "Thirty dollars? That's stupid!"

The locksmith retorted, "No. That's business. Locking your keys in your car is stupid!"

Somehow, I didn't think Don would find this amusing, either, at least not at the moment.

Perhaps I could placate his mood with a light-hearted gift, I thought. Halloween is just around the corner. I could order a Vampire opening tool for him. Better yet, what was it a customer had joked with me about the other day? A Boris Car Lock? That should get a laugh.

While my mind was wandering, the telephone rang, and Don answered it. Following the customary greeting, he paused for the caller to speak. "No, she's got me answering the phone now, while she stands around day-dreaming," he said, glancing up at me. "I'm thinking about trading her in."

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Beginner's Corner

Servicing Adams Rite



by Eugene Gentry

It is a learning experience if a customer will let you work on a lock that you know little about, and gratifying if you are able to finish the job satisfactorily.

When I first started locksmithing, a call came from a liquor store owner who explained that his front door would not lock from the outside. At night he would lock it from the inside, then crawl out the window which had an alarm. I told him that I was an

apprentice and had not worked on that type of lock but would be glad to take a look at it. He was kind enough to let me try. There were no customers in the store, so I was free to work without observers.

This was a deadlock, set in the aluminum frame of a glass door. The only thing I knew for sure about this lock was that the cylinder screwed out of the lockset.

The first thing I did was to take off the plate at the front edge of the door to see if I could figure out how the lock came apart. I then tried to screw out the cylinder with my fingers with no success. With a channel lock pliers, using a handkerchief for protection, I tried to easily persuade the cylinder to turn, but nothing happened.

After working for several minutes

and with the help of magnifying glasses I found two small holes in the faceplate. About a quarter inch inside the holes, hidden from sight, were the set screws that held the cylinder in place.

By loosening the screws and turning the cylinder counterclockwise, it came out of the lockset.

The problem was a broken tailpiece. Faced with the prospect of no parts, I took the cylinder to a locksmith friend, who supplied the tailpiece and advice on how to put it together again.

Frustrated with my ineptness, I spent the next several days reading and asking questions about this lock. Following are some of the things I learned.

On commercial aluminum doors one the most popular of the mortise locks is

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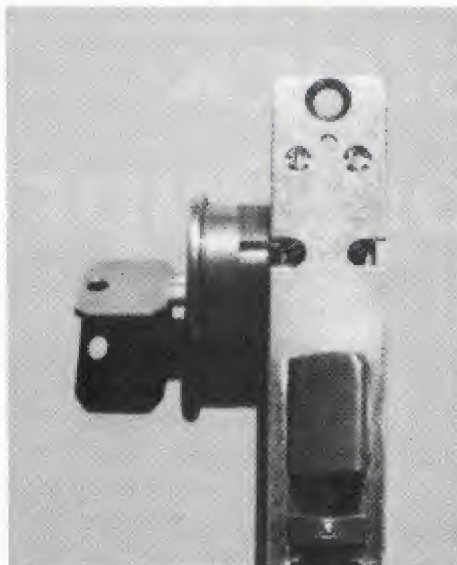
Continued from page 60

the Adams Rite, although there are several other brands. The trouble I was having in removing the cylinder was solved by finding the two set screws holding the cylinder and the turnpiece in position. Photograph one shows the set screws on the locksets plainly visible above the latch.

Note also, the grooves on the cylinder where the set screws enter. Some of these set screws need an Allen wrench; others are turned with a small thin flat blade screwdriver.

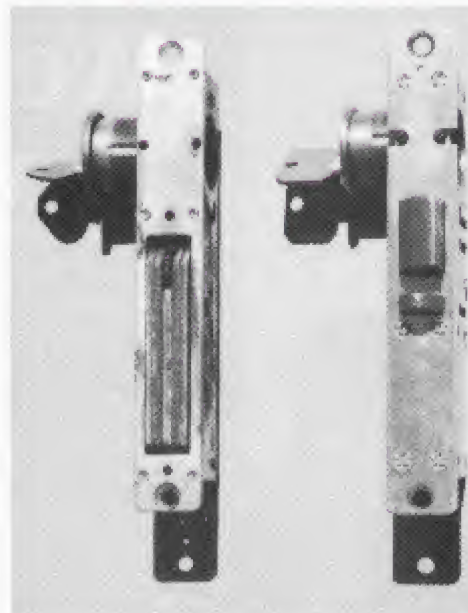
When turning the cylinder out, never try to force it. If it seems to stick, loosen the two screws at the top and bottom of the faceplate (See photograph 2.) These hold the lock in the door, and will allow for a little give.

If you are called out for a key change on these locksets, you usually



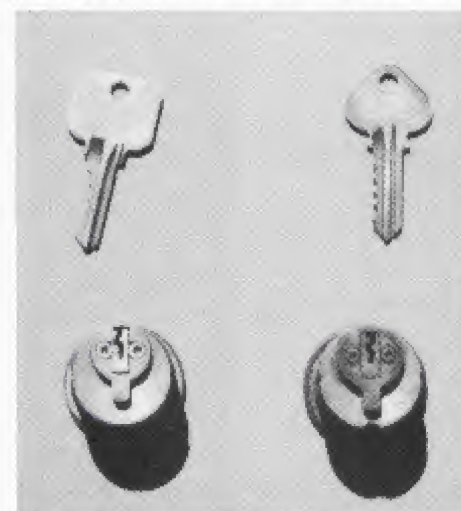
1. Note set screws and groove in cylinder.

find a Schlage or Yale cylinder although you may run into others such as Russwin, Baldwin, or Sargent. On the



2. Loosen screws at top and bottom if cylinder is hard to turn out.

key change when the cylinder is out, remove the two small screws on the tailpiece, and remove the tailpiece. (See photograph 3.) Turn the plug with the



3. Remove the tailpiece to rekey the cylinder.

existing key and push it out with the plug follower. Proceed with the pin changes like you would on a normal cylinder.

When you are finished with the change, if the cylinder does not have a hardened ring on the outside to protect it, ask your customer if you can install one for him. They only cost you about \$3.00 and they are for extra security. When this is installed, the cylinder cannot be turned out with a channel lock.

As you screw the cylinder back in the latchset, just tighten it with your fingers, then back it off to the indentation in the cylinder where the set screws go in. If you tighten it too much it will pull the lockset to one side and

Continued on page 65



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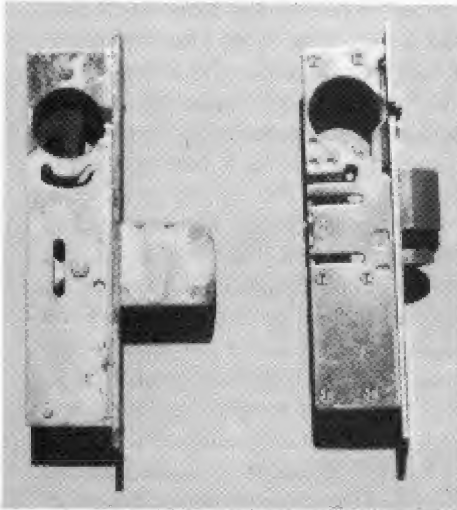
[Click here for more information](#)

Continued from page 62

offset the bolt. Turn in the set screws. See that the keyway is in the correct position. Be sure to check the jam to see that the bolt is aligned.

Some of the types of latchsets that you might see are the laminated hook bolt, the laminated deadlock that swings up, the heavy duty deadlock with dogs on the end of the deadlock, and the locking spring latch. (See photograph 4.) Some say that the laminated types of deadlocks are the best and strongest.

If you plan to be working on these



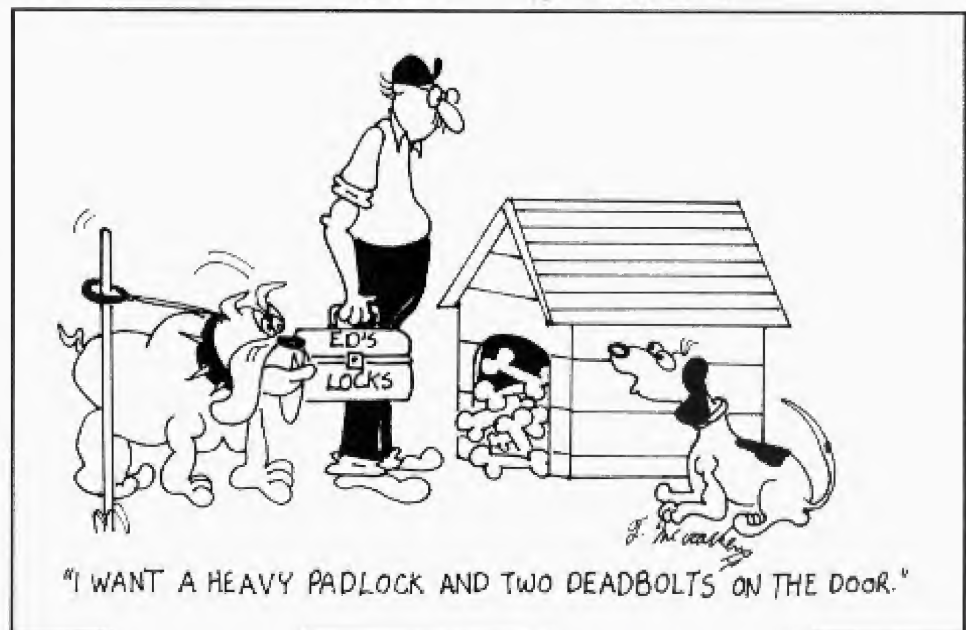
4. Laminated deadlock and spring latch.

commercial locksets, the professional locksmith offers these tips. Carry some Allen wrenches and a small flat blade screwdriver in your tool box. Carry extra set screws. If you do run out of set screws, you can use a Kwikset striker screw, the type that is half wood screw and half machine screw. Use a pair of nippers to cut off the wood threads at the end, and file off the rough edges.

One tool that would help is a tap for the threads in the lockset. Many times

you will find these stripped. You can buy this tool through your locksmith distributor. At times you will find broken tailpieces, so have some extra tailpieces to carry you through the job. If you are going to install any of these locksets, you will need an installation kit.

One last tip; do not use any WD-40 on these locksets. It will collect dust and cause future trouble. Use a Silicone type of lubricant. §



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GM's Rack Actuator

"The complaint is that the key won't work. The locksmith finds the ignition lock in working order, but there is a mechanical disconnect."

by Robert Sieveking

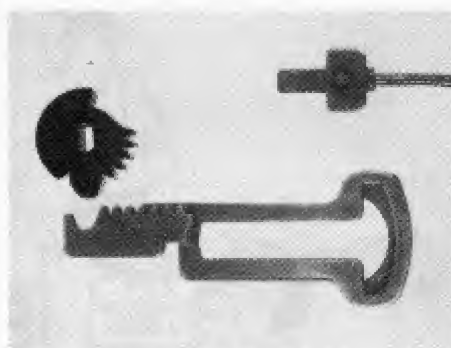
Over the years, one of the little things this shop does, that has been rather profitable, has been to change an occasional rack actuator in a GM tilt column. The customer calls, with the complaint that his "key doesn't work." The locksmith responds to the call to find that the ignition lock is in working order but there is a mechanical disconnect between the lock and the electrical switch.

What is the "rack actuator?" Why is it different in a tilt column? How does it fail? Where is it located, and how can I repair it?

As we all know, the rotation of the ignition lock is translated into an axial motion by a pinion gear and rack gear, at the rear of the ignition lock. Rotating the ignition lock to the on/run position with a key will cause the actuator to pull (or push in some models) the sliding contacts of the ignition switch to bring them into contact to turn on the electrical systems of the car. Further rotation of the ignition lock, against the spring tension of the ignition switch, will cause the starter to crank.

In a standard (non-tilt) column, the rack gear is fastened directly to a wire actuator rod, that travels down the column to the electrical switch. If you look under the dash, you will see the electrical switch, mounted on the top or left side of the column. The actuator rod connects the switch to the mechanical motion of the lock. In a tilt column, the actuator rod cannot be attached directly to the rack gear because of the motion of the tilt mechanism. The rack actuator, pinion gear, and the end of the actuator rod for the tilt column are shown in photograph one. Though there have been some design changes from year to year, these parts are typical.

What actually causes the actuator to fail can be debated. Whether the part is too weak or the customer too strong, I really couldn't say, but the end result is



1. Tilt column rack actuator.

always the same. As you see in photograph two the loop at the end of the actuator parts from the rack gear. The symptom is that, "right rotation of the ignition lock will not actuate the electrical switch." I guess that means "the key won't work," right?



2. The broken actuator.

The key rotates as it normally does. The wheel will lock and unlock, but the spring loaded portion of the switch cannot be felt and the electrics do not respond to the rotation of the lock. Put your hand under the dash to find the actuator rod. If rotating the lock does not move the actuator rod, your problem is a broken rack actuator.

If you believe this problem to be beyond the scope of a professional locksmith, have your customer call the GM garage and collect your service trip fee. However, you can learn to do this procedure, and it can become a profitable addition to your service business.

The rack actuator will cost you about \$3.00 at the dealer, and the job will take about a half hour. If you need to move the vehicle, turn the ignition to the on/run position, to retract the steering wheel lock, and start the car by gripping the actuator rod with a vise-grip pliers and sliding it up the column to start the car. (The small needle nose vise grips work best for this.) In some cases, the panning under the dash may have to be removed to access the bottom of the column. Don't bend or distort the actuator rod, as you will need it later. (You just saved your customer a tow charge. Don't let it go unnoticed.)

The rack actuator is located on the left side of the column, below the upper column housing. The removal will require a little more disassembly than that required to replace the ignition lock, but with a little care, it is not a difficult task. Organize your parts as you remove them, so that they can be replaced in the same order they were removed. Lay a shop towel on the floor of the passenger side of the auto, and place the parts on the towel as they are removed. The inner workings of the column are always liberally coated with grease. Be neat.

Disassemble the column as you would to remove the ignition lock. In photograph three you will see that the turn signal switch has been lifted over the tiller or steering shaft and allowed to hang below the column. In some cases, you will need to unplug the wire harness to the turn signal switch, at the base of the column, in order to gain enough slack in the wires to lift it over the tiller shaft.

The three Torx screws you see at 1, 2, and 3 in the photo, fasten the upper column housing to the tilt head. Remove them. Older models will have hex head machine screws in these positions, but the function is the same. With the screws removed, the upper column housing can be slipped up and

Continued on page 68

Continued from page 66



3. Remove the upper column housing.

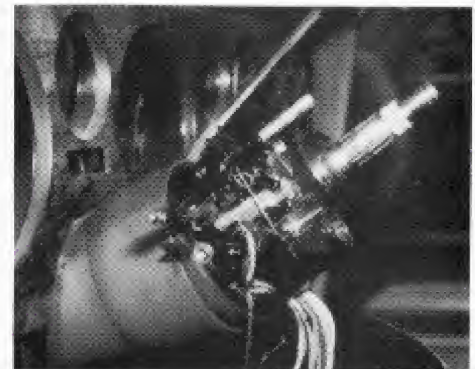
over the tiller shaft, exposing the rack actuator and pinion gear. If your auto is equipped with cruise control, feed a little slack in the control wires from the bottom of the column. Do not tug on the wires to get slack.

Before the rack can be removed, the tilting head must be removed from the stationary portion of the steering column. Remove the tilt column balance spring, as indicated in photograph four. This is a pretty strong spring. It causes the wheel to spring up when the release lever, at the left of the column, is lifted. Lift the release lever, and allow the tilt portion of the column to move to its maximum up position. This will remove much of the spring tension. Use a 1/4" square drive or a large phillips screw driver to push in and rotate the spring cap to the left. This will release the spring cap, and allow you to remove the spring.



4. Remove the tilt column balance spring.

A side view of the column is shown in photograph five. Remove the hex head machine screw at #1 with a 1/4" nut driver. This will release the wheel locking bolt retainer spring from the housing. Tilt it up to disengage it from the pinion gear at #2 and unhook it from the base of the wheel locking bolt. There is not need to bend or distort the retaining spring. Remove the wheel; locking bolt, #3, and set it aside.



5. Remove the pinion gear, lock bolt retaining spring, and wheel locking bolt.

The tilt head of the column rotates on two axle pins, located on the left and right sides of the column. The left axle pin is indicated by arrow #4 in photograph five. You will notice that the pin is tapped 8-32. The tapped hole is used to remove the pin. A small slide hammer puller is used, with an 8-32 machine screw, to remove the axle pins. An 8-32 machine screw can be substituted for the typical sheet metal screw in a body dent puller, or you can make a puller like that shown in photograph six.

By substituting a length of 1/4"-20

Continued on page 70



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Continued from page 68



6. Remove the tilt column axle pins.

threaded rod for the adjusting screw in a pair of vise-grip pliers, and placing a sliding weight on the rod, you can use the pliers to "gently" remove a drive pin, axle pin, or spline key. Remove the axle pins and release the tilt lever to "gently" lift the housing up the steering shaft. You need only remove the housing far enough to expose the broken actuator, as you saw in photograph two.

Carefully remove the old actuator and replace it with the new part. Be sure that the tip of the actuator rod engages the loop of the rack, and observe that the anti-rattle spring (flat steel spring) is in the housing with the rack actuator as the housing is slipped back into place. Lift the tilt release lever to allow the housing to slip down, and align the holes for the axle pins. Replace the axle pins by tapping them into place with a small soft face hammer.

Replace the wheel locking bolt, pinion gear, and retaining spring. Attach the retaining spring with the hex head machine screw. At this point, you can slip an ignition over the pinion gear shaft and try the actuator. You should be able to start the engine. Check your work at this point, to avoid unnecessary disassembly. If the engine cranks, continue to assemble the column. On the newer columns, the turn signal switch arm also actuates the headlight dimmer switch. Observe that the actuator rod engages the switch, mounted on the left side of the column, below the dash, before you replace the upper column shell. Replace the upper column shell, and complete the assembly as with a typical ignition replacement.

Test all functions of the column, and wipe down the wheel. Professionals don't leave greasy finger prints on the wheel or column. If you are having a problem establishing a price for your service, call the GM dealer, and don't forget to consider the tow charge. §

Technitips

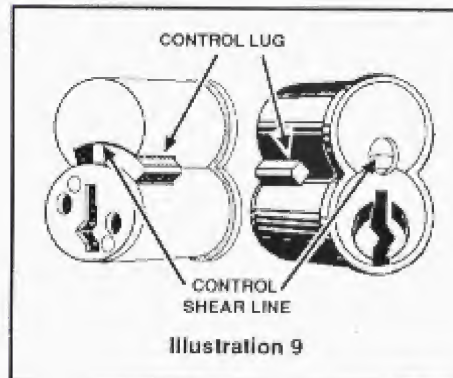
Continued from page 17

for cuts 3, 4 and 5 and will have to use the progression method for 1 and 2, or you can look directly under the lock on the deck lid and see the two rivets that hold the lock retainer in the deck lid. Drill these rivets, pull the lock clip down and remove the lock for disassembly to cut the first key.

I have found this to be a time saver, even over picking. Let's hope it helps someone else in the business.

Wayne Noland
Missouri

My Technitip is in regard to a Best/Falcon/Lori interchangeable core door locking system where the "control key" has been lost or is not available. I was asked to make a control key for this system so that they could change their cores. My first problem was to remove a core from one of these locks. The core is inside a solid brass knob, and is held in place by the control lug as you see in illustration nine.



I referred to The National Locksmith Guide to Interchangeable Core Cylinders, and according to the guide, there are two ways to remove the core. The first is picking, and the second drilling. Picking a removable core cylinder to the control shear line is extremely difficult, and drilling would not allow me to decode the pins to find the combination for the control key.

I decided to try another approach. By removing the knob from the lockset, I was able to shim the core, at the control shear line, from the rear. Though this method may only work in some cases, it should be considered before you reach for the drill.

G. Nelson Rondeau
Massachusetts

Cary Safe

Continued from page 56

removed from the outside.

This is accomplished by holding the dial and unscrewing the "button" covering the end of the safe spindle. It's easy, if you remember to do it. Once the button plug is removed, a regular slotted screw is seen. After unscrewing, the dial can be easily pulled off the punch-proof spindle and then the dial ring removed.

Now I saw the hole someone else had drilled into the inside of the unit at some earlier time. It was welded closed. I thought that the top hole represented the only attack on the safe before. That is why I used that hole. If I had removed the dial earlier, I might have had an easier job. Open and Prosper! §

The Lighter Side

Continued from page 58

Suddenly, his face brightened and he broke into gales of laughter. He was still laughing when he hung up the phone, a moment later.

"What was all that about?" I asked.

"That crazy Nick," Don replied, laughing again. "When I told him I was considering trading you in, he said I might be able to swap you for two twenty-five year olds."

"Ha, ha," I said sarcastically. "That's such an old joke, I can't see why you found it amusing."

"I didn't. What I was laughing at was Nick's warning to leave well enough alone. As he reminded me, swaps like that don't always work out the way you hope they will." He ducked through the door before adding, "I might get a forty-nine and a one year old, instead." §

Shop Talk

Helpful Questions and Answers

Written by all of the following authors: Dale Libby, Robert Sieveking, Dave McOmie, Shirl Schamp, Don O'Shall, and Jack Roberts.

Send your questions to Shop Talk: The National Locksmith, 1533 Burgundy Parkway, Streamwood, IL 60107.

Q: Recently, a customer walked into my shop with an old padlock asking to have a key fit to the lock. It seems to be from the Pennsylvania Railroad. A number is stamped on the back of the body - 68919F. (The "F" is centered below the number.) The shackle is stamped "Chas J. Fields Sons." It seems to be cast iron, and cowbell shaped. It weighs about 1-3/4 pounds. The keyway is unfamiliar to me, and is centered in a cast star on the bottom of the lock. Is it possible that this is a railroad switch lock, and is one of a number of keyed alike locks? Could you give me some information regarding its value, and whether a "pre-cut" key or blanks could be obtained. It seems to have either levers or disk type tumblers and is a double sided keyway. Can you assist me?

Bob Bardoff
Maryland

A: I am led to believe, from the drawings you have presented and the research materials I have found, that you are in possession of a "railroad" lock, not necessarily used to secure a rail switch, which was manufactured for the Pennsylvania Railroad. The lock is referred to as an "Iron Star" lock, because of the "raised" star surrounding the keyway. The lock could have been manufactured by the "Star Lock Works, of Philadelphia."

They, to the best of my research, manufactured the type of padlock you show, between 1836 and 1926. The PRR, Iron Star padlock has a value of approximately \$75, according to my research. Value is a very flexible thing as collectibles go, so don't get too hung up on the dollar amount. If you like it, buy it. Ask your customer what he wants for the piece.

Chas J. Field (no "S" on the Field name and no "& Sons" was found) was

a padlock manufacturer in Philadelphia near the turn of the century. The number 68919 and "F" was not found in my research. Many lock and padlock manufacturers arose and flourished around the turn of the century. Hundreds were in and out of business, and some of the names found on their locks were not necessarily that of the manufacturer.

Hardware wholesalers, many times would have a line of locks, under either their name or a special "brand" of their own. In the midwest, for example, the OVB brand, for Our Very Best, was a popular trademark. Trade Names, Brand Names, Trade Marks, and the like are confusing at best, and the genealogy of a company is almost impossible for someone not directly knowledgeable of a particular company to piece together. If a reader has knowledge of the "Chas J. Fields & Sons" trademark, I'm sure the information would add to the value of the piece you hold.

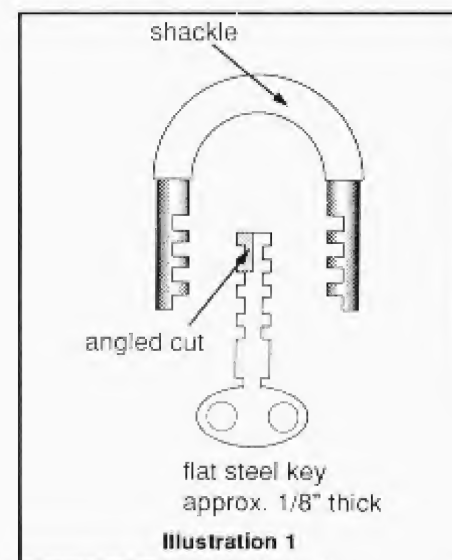
The lock is a Scandinavian or Jail padlock. Its original invention has been traced to c. 1720. It was invented by Christopher Polhammer. Polhammer (also Polheim and Polhem) was a prolific Swedish inventor, and invented the lock to meet the need for a more secure padlock, in a period when the warded lock was the limit of "high security" locking technology. Though he invented a number of items in his life (1661-1751) the padlock was considered his most significant inventions.

These locks were extremely hard to pick, and found immediate use in the prison system, to hold those individuals skilled in defeating the more common warded locks. Thus, the term "Jail lock" was used to identify this type of padlock. The first American patent for this type of lock was to James McWilliams (pat #116,977), and was issued in 1871. The rim, or ridge, around the bottom of the padlock, is used to fasten the bottom of the lock. The case is peened or formed over the edge of the case bottom. Later locks had rivets through the bottom of the lock, which fastened the bottom in place.

The "Z" style keyway indicates a flat key. Both steel and iron keys are to be found. To my knowledge, none will be

"pre-cut." A reader with a lock of this type may recognize the number and be able to furnish a cut key for the padlock. I do not have one.

The lock is a disk tumbler type, with a shackle as shown in illustration one that engages "all" the tumblers. Rotating a tumbler or disk with the proper key will bring a cut-out in the edge of the disk into alignment with the shackle. When all disks are properly aligned, the shackle can be removed from the case. Most of these locks were not "shackle retaining."



Traps are sometimes found in the disks, that complicated picking by preventing the disk from being rotated (picked) when pull tension is applied to the shackle. Angled cuts, as you see in illustration two, strongly resemble those found on Abloy keys. The angle will determine the amount of rotation the key will cause a disk. The lock is unlocked with only 90 degrees of key rotation. The key is retained in some varieties of this lock, until the shackle is replaced. Picking is a real challenge, but is not impossible. Keys can be made from flat steel stock.

If someone is particularly skilled in making keys for this type of lock, or has a cut-away of the design, I would like to hear from them. These locks are not common, but they are not rare either. Making keys for them can be profitable, in some cases. Have you consulted *The National Locksmith Guide to Antique Padlocks*?

Profiles (Sargent & Greenleaf)

Continued from page 42

the highly respected Yale locks yielded to his techniques.

During his long career in the security industry, James Sargent is credited with the invention of the first successful key change combination lock in 1857, the first combination lock controlled by a time-keeping device in 1872, and the 1874 installation of a lock ever installed in a bank.

The prolific inventor died January 12, 1910, but the firm of Sargent & Greenleaf continued his name and his tradition of dedication to quality and innovation in the manufacturing of security hardware. Through the years, S&G continued to grow, despite momentary setbacks such as factory fires and the Great Depression.

Near the end of World War II, Harry Miller who was a very inventive and knowledgeable locksmith, began the development of a more secure combination lock. Like James Sargent, Mr. Miller developed techniques to bypass the locks of the day, and used this knowledge to design a mechanism that he could not bypass himself. Thus Harry Miller's development of the process of combination lock manipulation paved the way for his creation of the manipulation-proof lock. This lock development led Mr. Miller to an association with Sargent & Greenleaf, where he selected to produce the new combination lock design.

With royalties from the manipulation-proof lock and other inventions, Harry Miller acquired Sargent & Greenleaf in 1952, continuing the tradition of quality and innovation begun by James Sargent in 1857. Under his leadership, the company continued to grow and prosper in Rochester.

In 1980, after 28 years as S&G's Chairman of the Board, Harry Miller, sold the company to Security Group, which is based in Indianapolis, Indiana. The firm's newest owners were attracted by the company's tradition of security industry leadership through innovation and high quality manufacturing.

Today, Sargent & Greenleaf produces and distributes a wide range of specialized security devices, including high security government padlocks, electronic access mechanisms, locks for construction equipment, weather resistant padlocks, time locks and time delay devices, safe deposit locks and key operated safe locks.

S&G also manufactures a full line of the highest quality combination locks, bearing Underwriters' Laboratories

Group 2, Group 1 and 1R listings. S&G's manipulation resistant locks are the only combination locks currently approved for use on new G.S.A. approved security containers, used to store our country's classified documents.

Sargent & Greenleaf serves the world's security needs through a worldwide distribution network, manufacturing and shipping products from the Nicholasville plant and S&G's facility in Switzerland.

Circle 399 on Rapid Reply

Security Door Controls

Security Door Controls (SDC) was founded 20 years ago by Arthur V. Geringer (AHC), in Tarzana, CA, after the company he worked for turned down an idea he had for electronic locks and access controls that satisfied fire codes and security requirements.

As electronic controls were introduced, problems with building codes and life safety became apparent. On a sales call in Sacramento in 1971, he explained to the state fire marshal that many owners wanted to lock their buildings electrically so that full access control capability could be used. The marshal spelled out the criteria for such a lock. As a result, Arthur designed and produced a working sample. The fire marshal approved his idea, and set up a test criteria of 800,000 cycles. After one million cycles, the test lab turned the lock off. The device was approved, and an industry was virtually reborn.

Today, SDC's product offerings cover over 200 items, protected by 20 patents and marketed through contract hardware distributors, security and access control dealers and to Original Equipment Manufacturers (OEMs).

"No other firm in our category offers a broader range of electronic locking devices and access controls," said Geringer. "We can easily provide our users with an effective solution to virtually any locking or access control problem."

Products include electromechanical locks, such as the HiTower series; the new SDC EntryCheck system for access control; electric bolt locks; electromagnetic locks, which are the most popular locks in use today; electric strikes; control consoles, and custom system designs.

These locks can be found in New York's World Trade Center, Battery Park, Chase Manhattan and JFK International Airport. Other venues where SDC locks are employed are the Mercedes Benz plant in Germany; in

Continued on next page

Continued from previous page

Saudi Arabia's two largest airports, in Los Angeles' Wells Fargo Bank and the ARCO Towers, and in psychiatric hospitals, prisons and sports arenas across the world.

Headquartered in Westlake Village, CA, the company occupies 10,000 square feet of office and manufacturing space, with an additional 12,000 square feet devoted exclusively by its suppliers to satisfy the needs of SDC.

Circle 400 on Rapid Reply

Speedypik

Speedypik is a revolutionary new computer system which scans and identifies key sectionals in only seconds. Developed by William Cimino, himself a locksmith for twenty years, the system is designed to help even untrained new employees identify and duplicate keys. Mr. Cimino tired of constantly having to train new employees on key identification, and the Speedypik solves this problem.

The unit is a self-contained computer which the locksmith will obtain from Speedypik. It features a unique key holder. Simply insert a customer's key into the holder. The computer scans the key and matches it to the correct sectional stored in the computer's memory. In seconds, the screen displays the key's profile, as well as all the appropriate location of the blank on the locksmith's own keyboard.

Mass production of the device is scheduled to begin in November, and actual manufacturing will be conducted by one of the top three computer companies. Two different models will be available, the Commercial Model (CM-1) and the Locksmith Model (LM-1). The commercial model holds 500 keys in its database, and the locksmith model contains 2500 keys. The manufacturer has suggested upgrading the mother board from an 8088 to a 286 mother board.

Picking the correct keyblank to duplicate has never been so easy. Simply push one button, insert the customer's key and release the button. The image sensor will take a picture of the key, scan the database and within about 15 seconds will display the exact match. The system will then tell you what hook the key blank is on and what the key name is.

Circle 351 on Rapid Reply

Steadfast Corporation

Steadfast Corporation founded in 1982, in Chelsea, Massachusetts, is a

custom designer and fabricator of specialty metals products for security, automotive, aerospace and other industries.

First formed to manufacture and market a device for the prevention of car thefts, Steadfast has become a leader in the auto anti-theft business. Initial sales of the Steadfast Security Collar were targeted at the rental car market to prove the device's effectiveness, as well as its mechanical reliability.

In 1983-84, approximately 3000 units were installed on Avis and National rental cars with remarkable results. Theft rates were reduced from around 10 percent to less than one percent. As a result of continued success in halting theft, all the major rental car companies have adopted the device where theft is a problem.

As word spread of the effectiveness of the anti-theft device, the company appointed distributors in high theft areas. The product has developed a strong appeal in the locksmith trade because of its reputation, the purely mechanical design and profit margin.

In 1986, Steadfast acquired the stamping house which had been making its products. Along with this equipment and expertise, came a secondary business of providing aircraft instrumentation for customers such as General Electric Company. The investment made in subsequent years to bring Steadfast to full qualification as a Military Specification supplier is reflected in the consistently high quality of its products.

Most recently, Steadfast has expanded its dealer network, and introduced several new products including a tailgate locking device. It also plans further design and fabrication of custom security products.

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